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FINDING AND TEACHING ATYPICAL CHILDREN

By

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FINDING AND TEACHING ATYPICAL CHILDREN

CHAPTER I

INTRODUCTION

Consideration of the individual needs of boys and girls is playing an increasingly important part in the educational provisions that are made for them. School surveys have emphasized the necessity for planning the entire educational program on the results of measurements of children's needs. Mort states this in terms of a commonly accepted principle: "To-day an equal consideration for the needs of the individual and of society demands that equality of educational opportunity be interpreted to demand that each individual have an equal opportunity for the development of his abilities and aptitudes for happy and successful living in our modern society."[1] This will come when each child's total educational environment is in proper relation to all that is within him.[2]

Any educational program must consider the individual needs of all the boys and girls in a community and must be effective in providing educational facilities for the greatest number which is administratively possible of achievement.

Fortunately, the needs of most of these children can be met on a common basis of instruction, for they deviate so little from one another that the adjustments necessary for their full development can be made in an ordinary classroom. For boys and girls, who deviate so markedly as to render futile the provisions ordinarily made, special educational facilities must be provided in order to make possible the attainment of equality of educational opportunity.

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[1] Mort, Paul R., *The Individual Pupil in the Management of Class and School*, p. 22. [Item 24 in Bibliography.]

[2] Ryan, Heber Hinds, and Crecelius, Philippine, *Ability Grouping in Junior High School*, p. 188. [Item 81 in Bibliography.]

The educational program which is provided for the atypical group must of necessity be markedly unlike that planned for other groups of children, but should not designate the boy or girl receiving it as one apart from his fellows or as one who is the recipient of special favors. Regardless of the type of education provided, or the cost of providing it, if it enables boys and girls to develop to the fullest extent their powers and capacities, it is a normal type of education for them. That the ideal education is not possible for each individual boy and girl is obvious, but the closer public school education approaches this ideal, the more nearly will the demands of democracy be fulfilled.

Although the movement for special classes for atypical children in the public day schools is fairly recent, it has grown with extraordinary rapidity, particularly in the case of special provisions for the mentally handicapped. This growth has been mainly in cities, however, and has left great numbers of children uncared for in rural areas and small towns. The establishment of many types of special education has had initial stimulus through private agencies interested in human welfare. For example, E. F. Allen of Elyria, Ohio, has fostered public interest in crippled children in Ohio to the extent that the education of these children is one of the major problems of special education in that state, and has been reflected in state legislation and civic organizations in other states.

All boys and girls who cannot profit by the regular school program, in spite of adjustments made, constitute a problem, the significance of which has been felt but the adequate solution of which has not yet been found. The larger cities have been partially able to solve this problem because of the possibility of homogeneity of grouping according to handicap. Very few of the cities of 50,000 or less have organized classes for the training of atypical boys and girls because of the increased cost of such classes, as well as because of the lack of information as to what makes a boy or girl atypical to the extent of requiring special education, the lack of information as to the probable number of such boys and girls in each community, the lack of trained teachers, the lack of state direction and supervision, and the lack of knowledge on the part of the parents as to the degree of educability possible for their children under regular instruction.

Certain factors have favored the extension of public school provision for atypical boys and girls; such as, (1) compulsory education laws; (2) wide distribution of public school facilities; (3) the more general employment of medical inspection and of clinical psychology in the schools; (4) the increasing importance of education as a function of the state; (5) the relative economy of public school over private school provisions; (6) disadvantages of institutional segregation, and (7) the increased emphasis placed on individual success for each boy and girl.

That the public will support to the extent of their ability any program of education which will care adequately for every boy and girl in the community is unquestioned. The increasing expenditures for public education, the extension of the compulsory education laws, the tremendous growth of high schools, evening schools and continuation schools, the extension of local and state welfare work, the emphasis on and the provision for vocational training, the increased emphasis on education in state charitable and penal institutions, the provision for more adequate training of teachers through state agencies, the extension of equalization of educational opportunity through state aid, the Federal grants for education, and the increase in the number of classes for atypical children in the United States, all attest to this thesis.

It is especially important that any consideration of a complete program for the handicapped boy or girl be studied as relating to a group in which there are many different types of handicapped children, rather than from the standpoint of some particular phase of the work.[3] Many studies have been made of each of the types of boys and girls who deviate from the normal to the extent that special educational facilities are necessary for their full development, but very few studies have treated these types as one group requiring differential treatment.

PROBLEM

It is the purpose of this study to classify atypical boys and girls from the viewpoint of selection for special education; to determine the probable percentage of children in each of the classifications, including the degree to which the school systems investigated are providing for atypical children, the probability of reduction in numbers in the future, and the relation of a program for atypical children to the state's minimum program; and to set up the current practices in, the methods of and the agencies for the selection, diagnosis, assignment and follow-up of each of the types requiring special education. The school cannot be fitted to the individual unless the needs of the individual are scientifically determined, and this study is an attempt to determine such needs of children as will form the basis for an adequate administrative program.

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[3] Division of Physical Education and Hygiene, Department of Education, Baltimore, Md., *Bulletin*, p. 7, November 1, 1928.

HISTORY

The history of each type of atypical children has been adequately written. Table I shows the source of such historical material as the writer has used in preparation of this dissertation. Those historical facts which were considered essential to the understanding of any particular type have been brought out in relation to that type.

SOURCE OF DATA

The author has made an analysis of the literature in the field since 1920 bearing on the problem of atypical children, except in a few instances in which he selected works published prior to 1920 which were still considered authentic by current writers. This literature, which forms a partial basis for the present study included reports of experiments with special classes; city school surveys; psychological studies which dealt with types of atypical children; annual reports of city and state superintendents; mimeographed reports from city school systems; special publications of boards of education and state departments of education; bulletins of the United States Bureau of Education; publications of societies interested in atypical children, and of state commissions authorized to investigate special education; references to current educational publications containing material on atypical children; references in periodicals from 1921 to 1929, and the most recent school codes of all states.

In addition to the analysis of literature, the writer conducted a field investigation of special class facilities in 18 cities. This investigation included an interview with the superintendent, the staff officer in charge of special education, the principal of special schools, the supervisor of each type of education provided for, the school physician or nurse, and one special class teacher

TABLE I

SOURCES OF HISTORICAL MATERIAL DEALING WITH DIFFERENT TYPES OF ATYPICAL CHILDREN

	Mentally Subnormal	Mentally Supernormal	Visual Defectives	Hearing Defectives	Speech Defectives	Orthopedic Defectives	Cases of Lowered Vitality	Temperamentally Atypical
Reference to one type only	75:11 80:981–84 91:146–59 108:464–70 114:273 116 130:1–18 137:168 138	40:50 146:47 150:267–93	1 164:39–40 165:253–94 175 178	212 229:677–83	239	256:7–10 261	283:5–7 285 305:336–45	
Reference to more than one type	14:73–81 33:3–37 19:43–57 75:5–13 204:188	19:90–101	14:73–81 33:3–37 75:5–13	14:73–81 33:3–37 19:1–7 75:5–13 204:119–70	14:73–81 19:85–89	14-73-81 33:3–37	19:78–84	14:73–81 33:3–37 19:17–28

Note: The first number indicates the reference number in the Bibliography. Any numbers following the colon indicate specific references to pages of source material.

in each type of special education, and a visitation of all types of special education class rooms in session. The population of the cities visited ranged in numbers from 5,000 to 2,000,000. The cities included were Tarrytown, Arlington, Hudson, Poughkeepsie, Rochester and Buffalo in New York State; Summit, Montclair, and Trenton, in New Jersey; Westchester, Lancaster, Harrisburg, Pittsburgh, and Philadelphia, in Pennsylvania; Baltimore, Maryland; Toledo and Cleveland, Ohio; and Detroit, Michigan. The larger cities visited were selected because of the reputed excellence of certain types of special educational facilities; the smaller cities and villages were visited on the recommendation of the Director of Special Education for Pennsylvania, the Assistant Commissioner of Education for New Jersey, and the Director of the Bureau of Tests and Measurements for New York.

The author also interviewed specialists in different fields of education including three Chiefs of Bureaus in the State Department of Education, New York; the Assistant Director of Special Education in Pennsylvania; the Assistant Commissioner in Charge of Elementary Education in New Jersey; the Supervisor of Special Education, Trenton, New Jersey; an executive officer each of the American Child Health Association and of the National Society for the Prevention of Blindness; two school physicians; one practicing physician; and members of the faculty of Teachers College, Columbia University.

TREATMENT OF DATA

The literature of the field was analyzed for suggestions as to classification of atypical children; data as to numbers of atypical children; methods of selection and diagnosis; and a consensus of opinion on controversial issues. Principles formulated from an analysis of the literature are utilized and practices current in the cities visited are discussed.

The probable number of atypical children of each class was determined by a tabulation of the estimates made by experts and the numbers found by various investigations. The actual percentage of each type of atypical children found in the cities visited was compared with the median percentage thus determined in order to show the extent of provision for special education in each city. The probable percentage of atypical children determined, weighted for the average cost of educating such children, was used as a basis for a formula for determining the relative importance of the education of atypical children as a part of the state's minimum program.

SCOPE OF THE STUDY

This study includes the following problems in the education of atypical boys and girls:

1. The classification of types.
2. The percentage of atypical children in the school population and its relation to the state's minimum program.
3. The selection, diagnosis and assignment of the mentally atypical.
4. The selection, diagnosis and assignment of the physically atypical.
5. The selection, diagnosis and assignment of the temperamentally atypical.
6. Follow-up.

CHAPTER II

CLASSIFICATION OF TYPES OF ATYPICAL CHILDREN

It is a universally recognized principle of public school education to-day that boys and girls must be classified for purposes of instruction in order that they may receive that education which allows for the greatest development of their mental, moral, physical and social powers. This is their inherent right under our system of free public school education.

Horn has defined atypical children as follows: "Those children are exceptional who, on account of psychological, physical, and social considerations ought not, or in spite of supplementary assistance, cannot be educated along with the typical group."[1]

The laws of Connecticut are typical of the laws of other states which define atypical children in general terms. "The term educationally exceptional children shall include all children over four and under sixteen who, because of mental or physical handicap, are incapable of receiving proper benefit from ordinary instruction and who, for their own or the social welfare, need special educational provisions."[2]

On this basis, Gesell says that ". . . an exceptional school child is one whose mental or physical personality deviates so markedly from the average or standard as to cause a special status to arise with respect to his educational treatment and outlook."[3]

Knight makes an equally general statement: "An atypical child is one who, upon examination, is found to be seriously deficient in one or more of the abilities essential to social fitness."[4]

The Auxiliary Class Act, passed by the Ontario Legislature in 1914, included children ". . . who, not being persons whose mental capacity is incapable of development beyond that of a child of normal mentality of eight years of age, are for any physical or mental cause unable to take proper advantage of the ordinary public or separate school courses." [5]

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[1] Horn, John Louis, *The Education of Exceptional Children.* [Item 16 in Bibliography.]

[2] *Connecticut School Document,* Number 5, 1922, Whole Number 448. Laws Relating to Schools, Section 17, p. 11.

[3] Gesell, Arnold, *Exceptional Children and Public School Policy,* p. 15. [Item 13 in Bibliography.]

[4] Knight, F. H., *"Behavior Problems of Atypical Children," Annals of American Academy of Political and Social Science,* 98: 67-73, November, 1921. [Item 18 in Bibliography.]

Although these and similar definitions establish the general status of atypical children, the selection of individual boys and girls is necessarily dependent upon a further classification. The author, in his analysis of the literature, selected those types for which special educational provisions should be made, and arranged them into mental, physical, temperamental and multiple handicap types with subclassifications for each type. None of the types is mutually exclusive, it being possible for any individual classified as one type to have characteristics of the other types. Mallory [21] [6] and Moore [23] have shown that there is a positive correlation between each of the major types of defects, in fact, an increasing number of defects is apt to emphasize the significance of each one.

It is, therefore, important that the classification of any boy or girl be dependent on the success with which he fits into the situation the classification has brought about. The keynote of the success of any classification procedure is the flexibility that it allows for the assignment or transfer of any individual within the scope of the classification.

THE MENTALLY ATYPICAL

The theory of a normal distribution of intelligence has been generally accepted but there is no general agreement as to the nature of intelligence. It is not within the scope of this study to analyze intelligence except in so far as it may affect the provision for specific types of education. That boys and girls with subnormal intelligence have always been a problem in our schools has been strikingly brought out in studies showing the amount of retardation and the number leaving our schools because of maladjustment attributable to the education offered. Those with supernormal intelligence have not been such a problem because, in most instances, they have easily met the requirements of a curriculum which has not challenged their abilities. Nevertheless, they constitute an important problem from the standpoint of the development of traits which will insure more adequate leadership in the future. Epileptics, while they constitute a very much smaller percentage of the school population, are distinctly a problem with which the state has to cope either in public schools or state institutions.

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[5] Canadian Council on Child Welfare, *Special Training for School Age Children in Need of Special Care*, p. 6. [Item 7 in Bibliography.]

[6] Throughout the text of this study, the number within brackets preceding the colon, refers to the corresponding number in the Bibliography. Specific references to pages within source material are indicated by numbers following the colon.

The Mentally Subnormal. In an interview, Dr. Coxe expressed the opinion that the definition of the special class as a closed type for the definitely feeble-minded bars it from the smaller community. There must be flexibility to allow for the minimum number required for state aid.[7]

The mentally subnormal includes all boys and girls who, by reason of their mentality, cannot be adequately educated in regular classes. The criteria for determining this are pathological and clinical, socio-industrial, educational, and psychological.

Because of the difficulty of making a diagnosis of mental deficiency on the basis of stigmata [114:143] and because 91 per cent of the feeble-minded are not of any special clinical type [75:187], this study will not consider the pathological and clinical types. The writer found these types in only three of the communities visited and they were in school because arrangements had not been completed as yet for their transfer to a state institution.

Tredgold says of mental deficiency: "The condition is a psychological one, although the criterion is a social one, and we may accordingly define amentia as a state of restricted potentiality for, or arrest of, cerebral development, in consequence of which the person affected is incapable at maturity of so adapting himself to his environment or to the requirements of the community as to maintain existence independently of supervision or external support."[8]

This is essentially the definition which is incorporated in the British Mental Deficiency Act of 1913, [134:9] and amended by the Law of 1927. [133] A similar view is held by Burr [92:136], Doll [98], Hodgkinson [15:41], Knight [18], Mitchell [120], Pintner [75:178], Porteus [124:2], and Wallin [65:50; 33].

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[7] Coxe, Dr. W. W., Director of Division of Tests and Measurements, State Department of Education, Albany, N. Y. (Interview)

[8] Tredgold, A. F., *Mental Deficiency*, p. 8. [134]

The sufficiency of this definition for purposes of special education of subnormal boys and girls has been questioned. Future social efficiency cannot adequately be measured in a boy or girl. Morgan says that even though the mental defective cannot compete on equal terms with normal persons, there is a place for him in our economic system. [62:345] Reed implies that the social inefficiency of our mental deficients to-day may be due as much to inappropriate education as to state of intelligence. [30:424] Fernald affirms that the majority of special class pupils become self-supporting [103] and Averill asserts that a respectable percentage can become so with the right kind of training. [86:124] Leta S. Hollingworth objects to this criterion because it does not apply equally to all individuals under all circumstances. [114:44]

While Tredgold's definition must be considered in planning the right kind of training for mental deficients, it cannot be used as a definition for purposes of classification.

A second definition of subnormal children includes those boys and girls who lack the capacity to grasp or profit by the work given in the regular grades.

The criterion of school progress or of educability alone is highly unsatisfactory. [114:45] Wallin contends that "Educability depends on many other factors than innate strength of mind, inherent capacity, alertness or intelligence: for example, such factors as interest, enthusiasm, ambition, effort, application, early training, age on entering the school, regularity of attendance, the cultural advantages afforded by the habitat, emotional drive and stability, health, and specific mental, physical or educational defects." [9]

The greatest disadvantage of using the criterion of educability is that the degree of educability must be determined by actual trial during which the mentally deficient boy or girl receives very little training of benefit to him. The Legislature of the State of New York recognized this in 1929 when it amended the Special Education Law to eliminate the provisions requiring three years or more of mental retardation and provide that the State Department of Education should make the necessary regulations. Under the previous law, a child with an Intelligence Quotient of 70 would not be eligible for a special class until he

[9] Wallin, John E. W., *Education of Handicapped Children*, p. 350. [33]

became ten years of age, thus losing four years of education at the level of his ability, assuming that he entered at the usual age of six.[10]

Studies have shown that intelligence tends to determine what progress a boy or girl should make in a particular school subject, and have indicated positive relationship between intelligence and school achievement.[11]

Tredgold, however, says that low capacity for school learning does not mean lack of general intelligence and that mere scholastic inability cannot be regarded as a criterion of mental deficiency. [133:36] [134:3]

The consensus of opinion, however, seems to be that as we refine our measures of intelligence, so we increase our ability to predict educability. Thus a consideration of the psychological criterion for classification of subnormal boys and girls will give a basis for partially supplanting the criterion of school progress.

That we should be cautious in interpreting psychological data is a truism which is expressed thus vividly by Spearman: "At the extreme ends of the distribution will lie a very small number for which the person is, on the one side, a genius and on the other side an idiot. Every normal man, woman and child is, then, a genius at something as well as an idiot at something."[12]

While it is true that the doctrine of innate differences has been under fire, it is also true that most of the educational progress of the past quarter-century has been based on an acceptance of the theory. [81:13] Wallin says, "Mental inferiority can be diagnosed only by means of a psychological examination. The psychological examination gives important clues regarding the degree of educability of the child, the kind of training needed, the occupational possibilities, and the required social control or disposition."[13]

Binet's own purpose in developing a scale was the detection of feeble-minded children in the school system. [317: 8] The refinements of the scale since that time have been directed with success toward the measurement of all children. Leta S. Hollingworth has declared that, "No matter what may be the educational, social or economic maladjustments of the individual, no matter what may be the number of his physical stigmata or his clinical features, if his general intelligence is normal, he is not feeble-minded. Thus, the first problem in the psychological determination of mental deficiency was the problem of measuring general intelligence." [14]

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[10] Delaware, Kansas, Massachusetts, New Jersey and South Dakota have laws providing for special classes for children three or more years mentally retarded.

[11] [72: 197] [74: 34] [66: 112] [77: 91] [119] [147] [151]

[12] Spearman, Charles E., *The Abilities of Man*, p. 221. [76]

[13] Wallin, *op. cit.*, p. 347.

As the unit of measurement of intelligence is the Mental Age or, translated into the chronological age ratio, the Intelligence Quotient, most school systems use one or the other as a basis for classifying children as mentally subnormal. In only one system investigated was the measurement not used. There is a decided lack of agreement among school systems and among writers as to the limit above which no boy or girl will be classified as mentally defective. Five systems (D, G, H, J, P)[15] used 70, three (I, M, Q) used 75, one (C) used 80 and one (E) used 90 as the upper limit. Two systems (K, O) used a Mental Age of ten years, and one system (L) used a Mental Age of twelve years as the upper limit. One system (B) selected the lowest two per cent on a group intelligence test for special class instruction. Hodgkinson [15:291] fixes 50 as the upper limit; Anderson [85], Lincoln [115] and Terman [77] fix 70; Porteus [124:18], Ellis [58:321], Zornow and Peckstein [82] and the Regulations of the New York State Department of Education fix 75; Broady [6:30] fixes 75-80; and the Minnesota Laws [101] fix 85 as the upper limit. The Auxiliary Class Act of Ontario sets an ultimate Mental Age of eight years and Pintner puts an ultimate Mental Age of ten years as the upper limit. Wallin [33] suggests that the lowest one per cent of the school population be selected for special classes for the mentally defective. Horn suggests that the lowest three per cent be selected.

There is a general agreement, however, that an I. Q. of 50 or that an M. A. of five years be the lower limit for special class instruction. Lincoln [115] found that only 10.3 per cent of 300 problem children who had been referred to the Harvard Psycho-Educational Clinic had an I. Q. below 50. Bond [5] investigated 2,195 cases of mental defectives in Mississippi and found only

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[14] Hollingworth, Leta S., *The Psychology of Subnormal Children*, p. 49. [114]

[15] Throughout the text, capital letters A to R refer to cities visited. An identification key, giving names of cities to which letters refer is filed in original manuscript in the Teachers College Library, Columbia University.

12 per cent of them with I. Q.'s between 50 and 59; 56 per cent of them with I. Q.'s between 60 and 74; and 32 per cent of them with I. Q.'s between 75 and 85. From a random sampling of 712 out of 1,500 special class pupils, Bain found 0.7 per cent below 50; 16.71 per cent between 50 and 59; 82.61 per cent between 60 and 74; and 0.98 per cent with 75 and above.[16]

While it may be desirable to send all children with an I. Q. of 50 or less to institutions, until such a time as the state can adequately care for them, such children will be a charge on the community and will be found in our public schools. Fortunately, the number of such cases is small.

An idiot is usually defined as an individual so lacking in intelligence that he cannot live without constant attention and care. His I. Q. is 0-25 and he has a Mental Age of less than three years. An imbecile can perform very simple tasks but only under very close supervision. His I. Q. is between 25 and 50 and he has a mental age of three to seven years. A moron is capable of learning to read and write and can do simple work but is incapable of working efficiently except under supervision. He is incapable of consistent planning, and is often lacking in appreciation of moral sentiments; he is lacking in judgment and is poorly inhibited. He has an I. Q. of 50 to 70 or 75 and a Mental Age of 8 to 12 years.[17]

There is also a border-line group with an I. Q. of 76-90 whose behavior largely determines their mental classification. [112]

None of the school systems visited used these designations, purposely avoiding them because of the stigma attached. Classification according to adjustability to the organization rather than to type proves far more effective in securing both the pupils' and the parents' coöperation.

There is no definite line of demarcation between mental defectives and normal children. While it is fairly safe to assume that a special class for the mentally deficient will contain boys and girls with an I. Q. range of 50 to 75 or 80, there will be individuals within this range who are not and who should not be in the class and, similarly, there will be children with higher I. Q'.s who are or should be in the class. In the final analysis, it is an individual matter. As Watts says, "The abnormal is the normal in distortion and exaggeration: the normal harbors the features of the abnormal in miniature."[18]

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[16] From data furnished the author by Lester C. Bain, Division of Child Accounting and Statistics, Cleveland, Ohio.

[17] [40] [64: 218] [112] [105: XVI] [106] [320]

Most school systems are providing special classes for those boys and girls who are not mentally deficient, yet who for some other reason cannot do the work of the regular grades. Children of this type should not be put into classes with mentally deficient children because the fundamental aims of the classes are different. [27:14] [219:31] An appreciable number of them are able to return to their regular grades. In smaller communities where there are not enough mentally deficient boys and girls to form a class, it is better to include this type than not to start a special class.

Special class provision should be made for the following groups of boys and girls who are not mentally defective, yet who cannot do the work of the regular grade:[19]

1. Border-line children who should have a try-out before being placed in classes for the mentally defective (This includes the pre-primary class.)
2. Backward pre-adolescents whose mentality does not permit of their accomplishing the regular work in the prescribed time
3. Backward adolescents who need vocational or prevocational training to fit them for employment
4. Backward pupils who need to learn a trade but who are not eligible for the regular trade school
5. Backward problem children who do not get along in any of the above groups because of indifference, loss of interest, bad school habits, and bad behavior
6. Slow thinking children who may require extra time or additional help to complete the regular grade curriculum
7. Normal children who are retarded because of attendance, late entrance, poor instruction, special subject disabilities, peculiarities of personality, social age, economic or home status, retardation policies in schools previously attended, foreign language handicaps, or previous health disabilities.

These special classes can be advantageously begun only in larger cities. In smaller cities and rural communities a great deal can be done by individual adjustment such as is suggested by Mort in *The Individual Pupil in the Management of the Class and the School.* [20]

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[18] Watts, Frank, *Abnormal Psychology and Education*, p. vi. [66]

[19] [7: 6] [11: 75] [13: 53] [24: 308] [66: 207] [82] [83] [89] [110] [134: 455]

The Mentally Supernormal. Certain boys and girls are variously referred to as "bright," "above average," "gifted," "brilliant," "talented," possessed of "genius," and so forth. These are the mentally supernormal and may be designated as those who are highly endowed with intelligence. [75:197] [17:220] In spite of the impetus given to the special education of this type of boy and girl during the past ten years, very little is yet being done to organize special classes in school systems. In only two of the cities visited were classes organized on a city-wide basis (D, E). In three other cities a few classes were organized on an experimental basis (A, B, G). The rest of the school systems visited either did not recognize the problem or attempted to provide comparable facilities through homogeneous grouping. Intelligence Quotients of 120 and 130, respectively, were used in two of the cities as the lower limit for admission to these classes. Terman rates all children 130 or above as superior [77]. Irwin and Marks [17] and Horn [16] rate all children 125 and above as very superior. Wallin [33] rates the upper 5 per cent of the distribution of intelligence as talented or precocious.

Any boy or girl with an I. Q. of 125 or above who is normal and is also endowed with superior intelligence should be in a special class. While ideally superior children with an I. Q. above 115 should have special attention, until the needs of the supernormal group are met, there is little hope of attaining this ideal.

Epileptics. McDougall deplores the use of the term "epileptics" as misleading and obnoxious, as epileptic children are quite ordinary in their psychology. [117] Wallin declares "It is practically impossible to find two epileptics who have exactly the same kind of convulsions. The most constant feature of the convulsions is the disturbance of consciousness, which is obliterated during the paroxysmal stage in the major attacks." [21]

Blanton and Blanton maintain that "Epilepsy, a term including a large amount of differentiated material, is a condition with which the teacher has more frequently to deal than she realizes. Epilepsy shows itself in what are called 'psychic equivalents,' that is, outbursts of temper, extreme irritability, or nervousness."[22]

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[20] Mort, Paul R. [24]

[21] Wallin, John E. W., *Clinical and Abnormal Psychology*, p. 531. [65]

Five out of the ten school systems visited that had epileptics had excluded the cases from school (A, C, D, E, J). The major reason for exclusion is the effect of the seizures on normal children in the class. (However, modern preventive medicine can do much in eliminating attacks.) Epileptics, then, constitute a definite unit in the school organization.

THE PHYSICALLY ATYPICAL

The physically atypical children include all those who require differentiated treatment in the public schools by reason of some functional or organic disease or defect which is of such a nature that it does, or may be expected to, incapacitate them for education with the regular classes or for future employment or occupation.

No small part of the retardation, failure and lack of adjustment to regular class conditions is directly attributable to these handicaps and it should be the first aim of the school (1) to initiate such policies of administration and instruction as will prevent or alleviate the defects and (2) to provide for such treatment as will return the child as quickly as possible to his normal learning capacity.

Visual Defectives. Certain public school classes originally started in England were called "myope" classes in that they selected those children who were totally blind or partially sighted because of progressive myopia. They were not and still are not distinguished in classification and, under the English Education Act, both classes receive their education as blind children. [197:6]

In the United States all but four of the states provide institutional care for the totally blind and these states have contract agreements with nearby states which maintain institutions. Special classes are permissable in 21 states and mandatory in one (New Jersey). Instruction for the blind in city day schools is very limited but provision for the partially sighted is growing rapidly. A commission appointed to study conditions of the blind in Pennsylvania, puts the responsibility for their education directly upon the school district. [189:24] [176]

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[22] Blanton, Margaret G., and Blanton, Smiley, *Speech Training for Children; the Hygiene of Speech*, p. 146. [240]

According to certain authorities,[23] the education of the blind and the partially sighted should be clearly differentiated, primarily because the methods of instruction are not the same.

The blind, for purposes of instruction, may be classified as those whose vision is less than 20/200 in the better eye after refraction, by the Snellen Chart (except those who have an undeveloped optic nerve and may improve enough to go into the sight-saving class, and those whose defect is of such a progressive nature that they are certain to become blind). [175] [176] [189:19] Peckstein has included those who have light perception and ability to count fingers at various distances. [188]

The visual defectives, for purposes of special instruction, are those whose defect makes it impossible for them to secure an education through the use of the same educational tools and methods under the same physical conditions as those with normal sight,[24] those who read ordinary type only at the expense of their vision or general health; those who have progressive eye trouble or eye conditions such that study in the regular grades would aggravate the condition or decrease the vision; and those with diseases of the eye. [175] [176]

The three most common types are the hyperoptic, or farsighted, the myoptic, or nearsighted, and the astigmatic. Hyperopia is most prevalent but is less frequently detected than the other types. [174] [176] Morgan classifies visual defects as organic and functional or due to personal factors or errors in adjustment, but since these factors are not mutually exclusive, they will not be considered here. [62:37]

There is a difference of opinion among oculists as to the eye conditions which make children eligible for sight-saving classes. [176] For that reason, ocular standards of admission such as are prescribed in individual school systems are not quoted here. [167:285] The National Society for the Prevention of Blindness has issued a guide for admission to sight-saving classes:

1. Children having a visual acuity of 20/70 or less in the better eye after proper refraction

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[23] 1. Joseph J. Endres, Chief, Physically Handicapped Children's Bureau, State Department of Education, Albany, N. Y.
2. Dr. H. G. Rowell, M.D., Assistant Professor of Physical Education and Assistant Physician, Teachers College, Columbia University.
3. Winifred Hathaway, Associate Director, National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City.

[24] [7: 6] [168: 9] [175] [176]

2. Potential candidates:
   - (a) Children in the elementary schools having four or more diopters of myopia
   - (b) Inactive subsidiary (or regressive) cases, such as interstitial or phyctenular keratitis, optic neuritis, trachoma, etc., in which some irritation may be present, provided the approval of the attending physician is given
3. All cases must be considered individually
4. Any child who, in the opinion of the ophthalmologist, would benefit by assignment to a sight-saving class, subject to suggestion for treatment and training by such ophthalmologist, and the acceptance of the educational authorities having charge of such classes
5. It is assumed that all children assigned to sight-saving classes have average normal mentality.[25]

In addition to these standards, Winifred Hathaway suggests that children convalescing from measles, scarlet fever, etc., should be in a sight-saving class for three months to prevent eye injury due to weakened sight from disease.[26]

Hearing Defectives. It is absolutely essential to distinguish between the deaf and the deafened—their instruction is different, their possibilities of success in employment are different, and their educational progress is different.[27] [223:103] The misuse of the word "deaf" is responsible for the existing confusion in the minds of educators and the resulting lack of education of the deafened child. [223:104]

Nebraska, by statute, defines a deaf person as any person of sound mind who, by reason of defective hearing, cannot profitably be educated in the public schools in the regular manner. Pintner holds this as standard for admission to a special class. [225] The Auxiliary Class Act of Ontario admits hard-of-hearing children to special classes who are unable to progress satisfactorily when placed in a front seat or who are in danger of becoming absolutely deaf. [7:6] The totally deaf may be classified, for purposes of instruction, as those who are congenitally deaf and those who have acquired deafness before the fifth year and have lost their speech. Twenty-eight to 35 per cent of the totally deaf are congenitally deaf. [204:17] [231] [234]

The adventitiously deaf, that is, those who have lost their hearing through accident or disease, are rarely totally deaf. If they have normal speech they should be taught lip reading with the hard-of-hearing or partially deaf in special classes in order that they may not lose their speech or that it may not become distorted by contact with children who have not normal speech. [204:16] [235:1] The partially deaf with less than 25 per cent hearing power, or those who cannot hear loud conversational tones farther than six inches, should be in classes for partially deaf; those who cannot hear loud conversational tones farther than two feet need special coaching, and those who cannot hear ordinary conversational tones farther than six feet need lip-reading alone. [202] [206] [219:28] [230:6] There are a very few cases who have a functional loss of hearing, that is, hearing mechanism is intact but due to some personal factor of complex nature, they do not hear. [62:51]

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[25] Hathaway, Winifred, *School Guides for Finding Potential Sight-Saving Class Pupils*, National Society for the Prevention of Blindness. (Typewritten copy given to author.)

[26] Hathaway, Winifred, Associate Director, National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City. (Interview)

[27] Rowell. (See footnote 23 [2.], p. 18.)

Speech Defectives. Pupils are eligible for speech training who are subject to some speech obstruction, defect or disorder which is amenable to correction or improvement. [33:124] [7:6] These pupils are usually enrolled in their regular class and receive periodic instruction in speech correction. "We have no standard classification of speech defectives."[28]

For the present purpose, we may think of speech defects as divided into three classes: stuttering, phonetic defects, and speech of mental defectives. [8:92] [253:16] Stutterers frequently have phonetic defects. They spasmodically or uncontrollably repeat the initial sounds of words (usually consonants) or spasmodically repeat syllables or words. [65:464] Some of the more important types of phonetic defects are lisping, which is due either to mental carelessness (negligent lisping) or to anatomical defects of the vocal organs (organic lisping), lalling or letter substitution, baby talk, cluttering or excessive rapidity of speech, or any form of indistinct articulation. [8:92] [65:464] [248:123]

Orthopedic Defectives. Boys and girls with orthopedic defects may be divided into two classes requiring distinct types of education: those who differ only to a slight extent from the normal, sound child, and those who are incurably or severely handicapped by permanent deformities to the extent that they cannot be cared for in regular classes. Cleveland, Ohio, Binghamton, N. Y. and New York City provide facilities for both types, the first in regular classes in the elementary school and the second in special schools. [273:6] Detroit [25:16], Chicago [276:62], Buffalo and Rochester [273:6], Baltimore and Philadelphia provide facilities only for the latter type. Horn [16], MacDonald [19:58] and Wallin [33] define a crippled child as under the second type. Abt [256:206] and Allen [257] define a crippled child as one whose muscular movements are so restricted as to affect his capacity for self-support. Those of the latter type who cannot be transported or who have active tuberculosis must be provided for in hospitals or at home as "shut-ins." [33] [262] [273:6] Seven cities in New York State provide convalescent homes partly or wholly through private initiative and one city provides a summer camp for cripples. [273:6]

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[28] Horn, *op. cit.*

Infantile paralysis is the greatest single cause of orthopedic defects, surgical tuberculosis being next, and congenital defects such as cleft palate and club feet third. Other defects include rachitic deformities, spastic paralysis, trauma, amputations, osteomyelitis, and muscular dystrophy. [11:66] [276:18] [277] [281] Stevenson, in a survey of crippled children in Chicago, found that only 8 per cent of the total number were unable to walk. [276:27]

From the standpoint of reëducation, a classification of crippled children should include all those who have orthopedic defects which might prevent their making full use of their abilities, rather than only those who are restricted in the use of the limbs or muscle powers to the extent that they must be educated in special schools.

The Cases of Lowered Vitality. This term is used to designate conditions in children which are usually treated in open-air, open-window, or nutrition classes. The open-air school is tending to disappear except for active tuberculosis cases because of the administrative difficulties attendant upon providing for the large numbers eligible for this type of school and because of the alternative use of the open-window classroom.

This group includes the malnourished or under-nourished, the anemic, the tubercular, those convalescing from a specific disease and those suffering from heart disease.[29]

1. Malnourished children may include any one of the other types. They usually exhibit bodily signs, such as dark fatigue

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[29] [6: 55] [26: 12] [288: 156] [296: 8] [305: 337, 386]

circle under the eyes, mouth breathing, paleness, flabby muscles, round shoulders, projecting shoulder blades, stooping posture, curvature of the spine and languor and fatigue; nervous symptoms; general symptoms, such as lack of resistance to disease, frequent colds, underweight and general frailty.

2. Anemic children are classified as malnourished when deficient or low in condition of blood and showing symptoms of malnourishment, uncomplicated by tuberculosis.

3. Tubercular children may be classed as contact cases—those exposed to tuberculosis in their homes; arrested cases; incipient cases—where the area is small and without known exposure; convalescent cases—those who have had tuberculosis and are now cured; and active cases of tuberculosis. All except the latter may be educated in the convalescent group.

4. Children who are convalescing, especially from diseases of the respiratory tract, are included in this group.

5. Children with heart disease are classified by the American Heart Association[30] as follows:

Class I. Patients with organic heart disease, but able to carry on ordinary physical activity
Class II. Patients with organic disease, but unable to carry on ordinary physical activity (cardiac insufficiency)
  A. Activity slightly limited
  B. Activity greatly limited
Class III. Patients with organic disease, but unable to carry on any physical activity, i. e., who must remain in bed or in a chair (cardiac insufficiency)
Class E. Patients with possible heart disease. Patients with abnormal signs or symptoms, not believed to be due to organic heart disease
Class F. Patients with potential heart disease. Patients without circulatory disease, whom it is advisable to follow because of the presence or history of an etiological factor which might cause disease.

About 60 per cent of the cardiac children are in Class I and 40 per cent in Class II with an occasional child in Class III. Ninety-seven per cent of heart disease in childhood is caused by rheumatism and 75 per cent of the children who have rheumatism develop organic heart disease. Chorea or St. Vitus Dance and growing pains are but different manifestations of rheumatic infection. [279:11]

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[30] The American Heart Association, 370 Seventh Avenue, New York City.

Classes I, II, and III are definitely special class problems whereas Classes E and F are general school health problems. Wood and Rowell classify organic cases as congenital and potential. Cases are potential that have (1) a history of acute rheumatism, (2) two or more of the following symptoms: tonsilitis, myositis, growing pains or joint pains, (3) severe recurring choreas, (4) children with heart murmurs and definite valvular lesions. [305:369]

THE TEMPERAMENTALLY ATYPICAL

Neurotics. Irwin and Marks define neurotic children as those who "for some reason other than intelligence do not get on in the group to which they belong by reason of their intellectual endowment."[31]

Neurotic children are inclined to be excitable, indecisive, easily tired, restless, complaining, incapable of relaxing properly, unable to sustain concentrated attention, forgetful, loquacious, pugnacious, supersensitive, self-conscious, taciturn, stubborn, suspicious, markedly timid, markedly nervous, and sometimes are subject to alarming dreams, nightmares (sleep starts), somnambulism, insomnia, headaches, vertigo, palpitations, obsessions, tantrums, and conduct disorders. [17:181] [65:266] [311] [320]

They are behavior problems with a history of psychic conflicts. Their actions may take the form of compensation or attempted superiority to hide a defect; of extrovertive or introvertive personality traits; of negative suggestibility or the reaction to suggestions in a manner directly opposed to the reaction expected; of ego-centricity or extreme overestimation of one's individual value; or of hysteria or the attempt to disguise unpleasant experiences and feelings. [62:562] [65:269] [240:133-135]

Neurosis is essentially a condition of emotional instability that may have its roots in long established faulty attitudes or habits. [64:142]

Truants, Delinquents and Incorrigibles. These three types of boys and girls are hardly distinguishable from the standpoint of classification for instruction. They also include many neurotics whose maladjustment is serious.

The Rules of the Board of School Commissioners of Baltimore for 1927 state that ". . . pupils who cannot work to advantage in any regular class, and pupils who persist in non-attendance, obstinacy, quarreling, disorderly or immoral conduct in the school or in the street, or who shall in or about the school premises use or write any profane or unchaste language, may . . . be transformed to such ungraded classes as may be provided by the Board." These rules also cover the establishment of a parental school for habitual truants. The Auxiliary Act of 1914 of Ontario provides for disciplinary classes and parental schools for those whose conduct, home conditions, or environment render instruction in such classes necessary. [7:6] Detroit maintains ungraded rooms for boys whose conduct is such as to interfere seriously with the good order of the regular school, and for chronic truants. [10:17] Jones classifies delinquents as naughty boys, temperamentally difficult children, those with criminal tendencies, and truants. [316] Morgan defines misconduct as an evidence of a disease of some part of the mind. [63:13]

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[31] Irwin, Elizabeth A., and Marks, Louis A., *Fitting the School to the Child: An Experiment in Public Education*, p. 181. [17]

It is evident that all temperamentally atypical children have traits more or less in common and that it is exceedingly difficult to classify them separately for purposes of instruction. It is fairly obvious, however, that neurotics should be differentiated from truants and delinquents from the standpoint of prevention and remedy.

Multiple Handicaps

There is uniformity of agreement that the blind or partially sighted, the deaf or hard-of-hearing, the crippled, and the temperamentally atypical boys and girls who are also mentally defective should be in an institution for the feeble-minded, or otherwise especially cared for. [33:120] [105:52] [175:21] [165:302] Any other combination of the above types should be in institutions, because very few individuals have the tenacity of purpose and power of will to overcome a double handicap to the extent of maintaining normal social contacts. For every Helen Keller there are hundreds who try unsuccessfully to overcome their great handicaps. It is only the boy or girl who is highly endowed with intelligence who needs public school opportunity to overcome two or more serious handicaps. For the other types listed in this chapter, the placement of the child with more than one handicap should be determined by the greater handicap.

SUMMARY

Atypical children have been classified as follows for the purpose of designation for special instruction:

A. Mentally atypical
  1. Mentally subnormal
    - (*a*) Mental defectives who should be classified on a basis of Intelligence Quotients between 50 and 75 or 80 with exceptions according to each individual case
    - (*b*) Border-line children who need a period of observation before placement
    - (*c*) Backward children whose mentality is less than average, but not defective
    - (*d*) Retarded children who will return to grade after remedial instruction
  2. Mentally supernormal
    - (*a*) Above average children with Intelligence Quotients between 115 and 125
    - (*b*) Children with Intelligence Quotients of 125 or more who are normal or superior in physical and social development.
  3. Epileptics

B. Physically atypical
  1. Visual defectives
    - (*a*) Totally blind
    - (*b*) Partially sighted
  2. Hearing defectives
    - (*a*) Totally deaf
    - (*b*) Adventitiously deaf or hard-of-hearing
    - (*c*) Slightly deafened
  3. Speech defectives
  4. Orthopedic defectives
    - (*a*) Those whose muscular movements permit of regular class attendance
    - (*b*) Those so restricted in the use of their limbs as to require transportation to and assistance in school

    - (*c*) Hospital cases
    - (*d*) "Shut-in" cases
  - 5. The Cases of Lowered Vitality
    - (*a*) Malnourished
    - (*b*) Anemic
    - (*c*) Tubercular
      - (1) Contact cases
      - (2) Arrested cases
      - (3) Incipient cases
      - (4) Convalescent cases
      - (5) Active cases
    - (*d*) Convalescents from other diseases
    - (*e*) Cardiacs

- C. Temperamentally Atypical
  - 1. Neurotics
  - 2. Truants, incorrigibles and delinquents

- D. Multiple handicapped

Children with multiple handicaps which include mentality, sight, hearing, bodily deformity or temperament should be placed in suitable institutions or be otherwise especially cared for. All others may be provided for in the situation determined by the major handicap.

CHAPTER III

THE PERCENTAGE OF ATYPICAL CHILDREN IN THE SCHOOL POPULATION AND ITS RELATION TO THE STATE'S MINIMUM PROGRAM

It is desirable to know the approximate percentages of atypical boys and girls one should expect to find in any community, in order that an administrative program may be set in motion for the provision of special classes, in order that the state may include the education of these children as part of the state's minimum program, and, most important of all, in order that no boy or girl may be prevented, because of physical, mental or social status, from utilizing to the fullest extent his or her capabilities for education.

Investigations have shown that it is practically impossible to determine percentages of physically handicapped children applicable to the total situation. The American Child Health Association encountered this difficulty in a survey of 86 cities. "It is impossible to present a representative or a comparative picture of the prevalence of physical defects in the school population. In fact, one of the most obvious weaknesses disclosed in the survey is the lack of standardization in the definition of a defect and a correction."[1]

Reed says practically the same thing. [30:298] Rowell[2] holds that it is impossible to determine numbers of handicapped children because of differences in physical examinations and regional differences in numbers.

The Distribution of Intelligence

As shown in Chapter II, there is very little agreement among the definitions of mentally atypical boys and girls. Consequently, estimates and investigations show a great variation.

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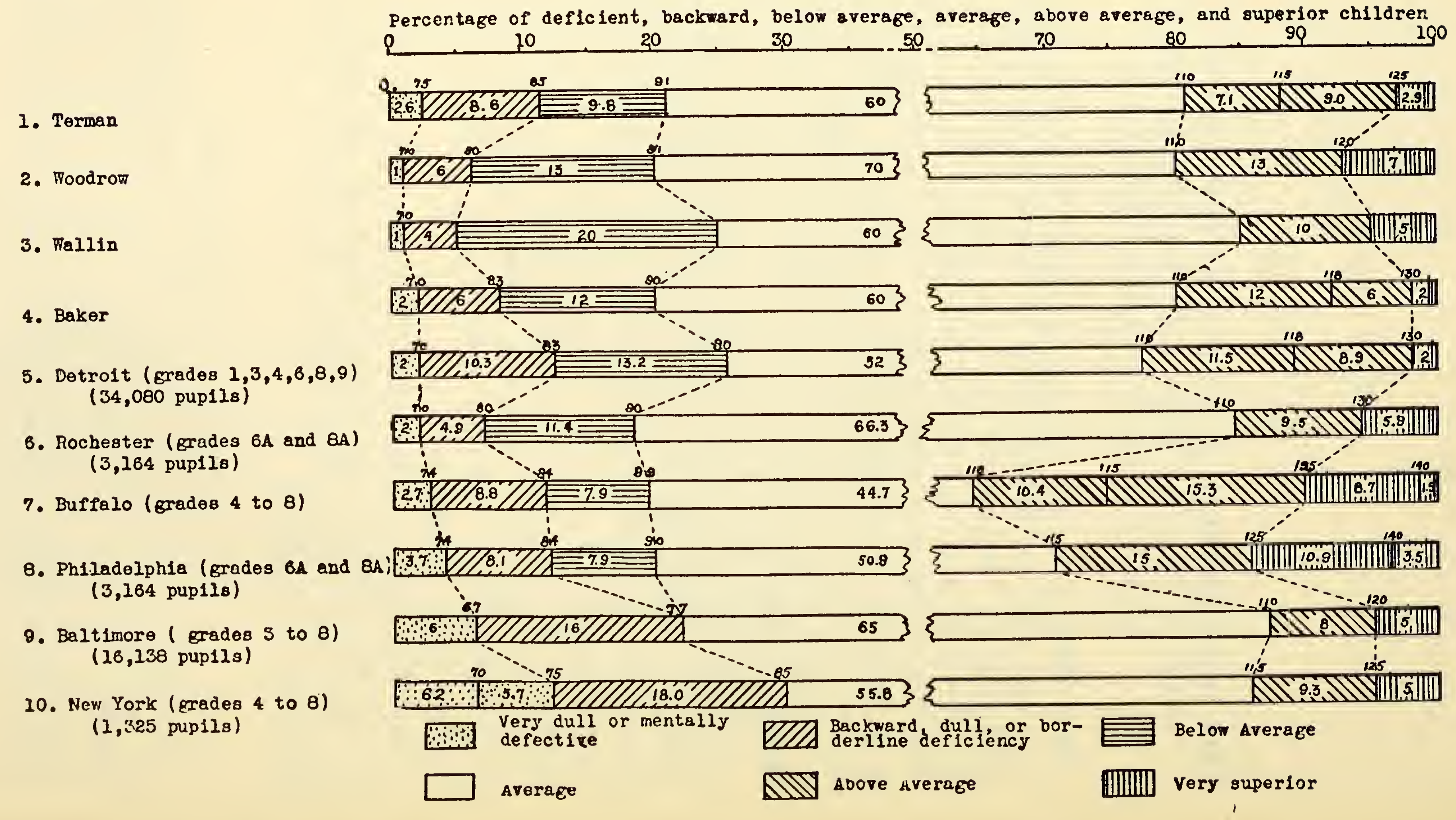
[1] American Child Health Association, *A Health Survey of 86 Cities*, p. 179. [278]

[2] Rowell, Hugh Grant, M.D., Assistant Professor of Health Education and Assistant Physician, Teachers College, Columbia University. (Interview)

DISTRIBUTION OF INTELLIGENCE AS INDICATED BY FOUR AUTHORITIES AND AS FOUND IN VARIOUS GRADES IN FIVE CITIES



NOTES TO ABOVE CHART

Data from the following sources:

1. Terman, Lewis M., *The Measurement of Intelligence*, pp. 78–124. Houghton Mifflin Co., 1926.
2. Woodrow, Herbert H., *Brightness and Dullness in Children*. J. B. Lippincott Company, 1923.
3. Wallin, John E. W., *Education of Handicapped Children*. Houghton Mifflin Co., 1923.
4. Baker, H. J., *Characteristic Differences in Bright and Dull Pupils*, p. 103. Public School Publishing Co., 1927.
5. (a) Data from visitation. (b) Results from group intelligence tests Nov. 5, 1926. Detroit Psychological Clinic, File No. 6813–6, Table VII, (X-Y-Z grouping).
6. Data from visitation.
7. (Visitation)
8. (Visitation)
9. (a) Data from visitation. (b) Baltimore Department of Education, Bureau of Research, Distribution Chart No. 8; March 30, 1926, (X-Y-Z grouping).
10. See Irwin, Elizabeth A., and Marks, Louis A., *Fitting the School to the Child: An Experiment in Education*. The Macmillan Co., 1924.

Using the psychological definition, one should be able to determine rather accurately the percentages of each type of mentally atypical children. The chart on page 28, however, shows that there is wide variation both in the interpretation of percentages of population in terms of ability and in actual percentages found in different school systems. An Intelligence Quotient of 67 designates possible mental defectiveness in one instance, 70 in four instances and 75 in two instances. An I. Q. of 120 indicates very superior ability in three instances, 125 in six instances and 130 in two instances. Terman found 11.23 per cent of 905 unselected children below 85 I. Q. In Buffalo and Philadelphia approximately the same percentage was found in grades four to eight inclusive, but in New York City, Irwin and Marks [17:48] found 29.9 per cent below 85 in the same grades, and 29.3 per cent below 85 for 606 entering six-year-olds. Baltimore measured 22 per cent below 77 in grades three to eight. Terman, Woodrow and Baker found 20 per cent with an I. Q. of 110 or more. Detroit, in grades one to nine, uncovered approximately the same percentage, 22.4, but Rochester measured 15.4 per cent, Baltimore 13.0 per cent, and Buffalo 25.5 per cent with an I. Q. of 110 or more. Philadelphia, in grades six and eight, measured 29.4 per cent with an I. Q. of 115 or more.

There is a wide divergence both of opinion and of knowledge concerning the number which would profit by special class instruction. There is also a wide difference in data due to type of community measured, unreliability of measuring instruments, and lack of standardization of terminology in assembling and interpreting data.

PERCENTAGE OF EACH OF THE TYPES OF ATYPICAL CHILDREN IN THE SCHOOL POPULATION

In this study the author has compiled data from 45 investigations as reported by 24 writers, and secured, from books and periodicals, 146 estimates made by 89 authorities, in order to arrive at a reasonable percentage for each type of atypical children considered here. The source of authority for each percentage is tabulated in the Appendix. The median percentage for each type is given in Table II.

The median was selected as the measure of central tendency for each type in order that undue weighting might not be given

TABLE II

PERCENTAGES OF DIFFERENT TYPES OF ATYPICAL CHILDREN IN SCHOOL POPULATION FOR WHOM SPECIAL REMEDIAL OR EDUCATIONAL PROVISION SHOULD BE MADE IN REGULAR CLASSES, FULL-TIME SPECIAL CLASSES OR PART-TIME SPECIAL CLASSES *

Type of Atypical Children	Number of References	Median Percentage, (Appendix)	Total for Atypical Groups	Remedial Treatment in Regular Class	Special Class Provision
MENTALLY ATYPICAL			6.53		
Mentally subnormal	11	4.70			4.70
Mentally defective [1]	11	.50			
Mentally defective [2]	20	2.00			
Epileptics	1	.08			.08
Mentally supernormal	9	1.75			1.75
PHYSICALLY ATYPICAL			27.90		
Visual defectives	2	7.55		7.32	
Blind (total population)	1	.05			.02 [3]
Requiring special class	14	.20			.20
Hearing defectives	19	9.20		8.81	
Deaf (total population)	2	.06			.06
Requiring special class	5	.30			.30
Requiring part-time class	13	.80			.03 [4]
Speech defectives	12	2.60		2.30	.30 [4]
Stutterers	8	1.00			
Orthopedic defectives	5	5.80		5.28	.22 [4]
Requiring special class	13	.30			.30
Cases of lowered vitality requiring special class	4	1.25			1.25
Cardiacs requiring special class	4	.60			.60
Cardiacs	9	1.50		.90	
TEMPERAMENTALLY ATYPICAL			4.80		
Neurotics requiring special class	5	1.00			1.00
Mirror writers	2	.27			
Truants, incorrigibles, delinquents	4	3.80		3.20	.40 [5]
Defects in total school population					
Physical defects	2	75.00			
Defects in vision	13	25.00			
Malnourished	9	20.00		18.75 [6]	
Tubercular	4	4.60			
Total				46.56	11.21

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* (Data from reports of investigations and estimates of authorities tabulated in Appendix.)

[1] Social criterion.

[2] Social and psychological criteria.

[3] Only one blind person in ten is under 20 years of age. [189:612]

[4] Computed on the basis of one hour per week in a part-time class for lip reading, speech correction and therapeutic treatment, or 1/25 of total percentage.

[5] Lowest estimate used instead of median.

[6] Excluding cases of lowered vitality.

to extreme cases. The mentally atypical children, who constitute a total of more than six per cent of the school population needing special class facilities, represent the greatest single problem of the atypical group from the standpoint of numbers. The temperamentally atypical group is probably the least important problem in present administrative practice, both from the standpoint of educability and of numbers.

The fact that more than 11 per cent of the school population

TABLE

NUMBERS ENROLLED IN EACH TYPE OF ATYPICAL CLASS AND PERCENTAGE
MENT OF THE 18 SCH

City	Total Enrollment	Grades	Total Number in Special Classes[1]	Percentage in Special Classes[1]	Mentally Subnormal		Mentally Supernormal		Visual Defectives		Hearing Defectives		Speech Defectives	
					No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Philadelphia, Pa. ..	204,723	1 to 8	9,717	4.75	7,210[2]	3.52	250[3]	.12	157	.08	128	.06	2,840	1.39
Detroit, Mich.	169,477	1 to 9	6,503	3.84	3,565[4]	2.10	.....	.....	318	.19	247	.15	4.372	2.58
Pittsburgh, Pa.[5] ...	81,267	1 to 9	1,249	1.54	1,050	1.29	.....	.....	.....	.....	.....	.....	673	.83
Cleveland, Ohio ...	126,708	1 to 9	11,070	8.74	7,971	6.29	628	.5	277	.22	145	.11	......	.....
Baltimore, Md. ...	103,940	1 to 9	2,530	2.44	1,316	1.27	150[3]	.14	28	.03	27	.03	......	.....
Buffalo, N. Y.[9]	71,629	1 to 8	2,270	3.17	1,305	1.82	.....	.....	41	.06	.....	.....	1,797	2.51
Rochester, N. Y. ..	40,748	1 to 9	1,809[11]	4.40	1,307	3.21	75	.18	36	.09	24 218[13]	.06	370	.91
Toledo, Ohio	35,281	1 to 8	867	2.46	540	1.53	.....	.....	62	.18	29	.53	......	.....
Trenton, N. J.[5]	15,565	1 to 9	338	2.18	338	2.18	.....	.....	.....	.....	.....	.08	......	.....
Harrisburg, Pa.[5] ...	11,883	1 to 9	182	1.53	91	.77	.....	.....	.....	.....	.....	.....	......	.....
Lancaster, Pa.	9,056	1 to 9	81	.89	81	.89	.....	.....	.....	.....	.....	.....	......	.....
Montclair, N. J. ...	5,928	1 to 9	298[14]	5.01	127	2.14	.....	.....	34	.57	25	.42	17	.29
Poughkeepsie, N. Y.[5]	5,010	1 to 8	90	1.8	90	1.8	.....	.....	.....	.....	.....	.....	......	.....
Hudson, N. Y.	2,100	1 to 9	160[14]	7.61	36	1.71	.....	.....	4	.19	.....	.....	......	.....
West Chester, Pa. .	2,100	1 to 9	18	.86	18	.86	.....	.....	.....	.....	.....	.....	......	.....
Summit, N. J.[5]	1,477	1 to 9	18	1.22	18	1.22	.....	.....	.....	.....	.....	.....	......	.....
Tarrytown, N. Y.[9] .	875	1 to 9	30	3.43	30	3.43	.....	.....	.....	.....	.....	.....	......	.....
Arlington, N. Y. ...	550	1 to 9	12	2.18	12	2.18	.....	.....	.....	.....	.....	.....	......	.....
Average (Montclair and Hudson not included)[14]						2.14		.24		.13		.07		1.64[1]

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[1] Speech defectives equated on the basis of one period per week or 1/25 of total number for full-time instruction.

[2] Includes restoration classes.

[3] Estimated.

[4] Includes mental defectives, 3,177; and special preparatory, 388.

[5] United States Bureau of Education, Bulletin 1928, No. 25.

[6] Including sanitorium cases, 101.

[7] Boys' and girls' farm and detention home.

deviate so much from the normal as to require special class facilities, and that over 46 per cent, in addition, deviate enough from the normal to make remedial attention in the regular classroom necessary, clearly indicates the importance of the problem as a fundamental phase of the administration of public schools. The author recognizes that the median of a number of unrelated estimates and investigations is subject to grave criticism from the standpoint of statistical procedure and that, at best, the median

III

Each Type is of Total Elementary and Junior High School Enroll-
ool Systems Visited

Orthopedic Defectives		Cases of Lowered Vitality										Truants, Incorrigibles, and Delinquents					
		Total		Malnourished		Anemic		Tubercular		Cardiac		Total		Truants		Delinquents	
No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
516	.25	516	.25	372	.18	......	.....	122	.06	22	.01	826	.4	826	.4	......	.....
662	.39	1,232	.73	.....	.....	......	.....	......	.....	.....	.....	304	.18	.....	.....	304	.18
52	.06	120	.15	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
148	.12	834	.66	473	.37	......	.....	293[6]	.23	68	.05	1,067	.84	831	.66	236[7]	.19
1,610[8]	1.27																
290	.28	491	.47	474	.46	......	.....	......	.....	17	.02	228	.22	228	.22	......	.....
167	.23	251	.35	140	.20	111	.15	......	.....	.....	.....	434	.61	47	.07	387[10]	.54
128	.31	165	.40	68	.17	35[12]	.09	62	.15	.....	.....	50	.12	.....	.....	50	.12
167	.47	69	.20	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	91	.77	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
106	1.79	5	.08	.....	.....	2	.03	......	.....	3	.05	......	.....	.....	.....	......	.....
......	.....	120	5.71	.....	.....	......	.....	120	5.71	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
......	.....	......	.....	.....	.....	......	.....	......	.....	.....	.....	......	.....	.....	.....	......	.....
	.26		.44		.28		.12		.15		.03		.4		.34		.26

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[8] Given special treatment in regular schools.
[9] Annual Report of the State Department of Education, 1928.
[10] Temporary court cases.
[11] Lip-reading pupils equated on the same basis as speech defectives. (See reference I.)
[12] Hospital cases.
[13] Lip reading, one-half hour per week.
[14] Census only, no classes established.

is but a rough estimate, yet he has been unable to find any single figure which represents the numerical extent of the problem and, in the absence of such a figure, accepts the median figures presented in Table II in the hope that they will be substantiated or revised by subsequent investigations using comparable definitions and instruments of measurement. The data presented in Table II is subject to further criticism in that boys and girls classified as one type tend to have characteristics of other types, as shown on page 9 of the text. Thus, this considerable overlapping would tend to reduce the number of boys and girls for whom special organization is necessary. The fact that, in many investigations, standards of classification are lower than are set up here, that in each investigation there is a tendency to miss a few cases, and that border-line children are likely to be classified as normal rather than subnormal, introduces a constant error downward which partially compensates for overlapping of types.

Extent of Provision for Atypical Children

It is also important to know the degree to which school systems are at present providing special facilities for deviates. Table III shows the actual number being taught in special classes in the 18 school systems visited. None of these cities under 50,000 population provided facilities for any type except the mentally subnormal. Two school systems, Montclair and Poughkeepsie, had completed a partial census of atypical children and expected to inaugurate a program for them.

Table IV shows the extent to which each of the school systems visited exceeds or is exceeded by the median percentages as given in Table II. With the exceptions of the mentally superior, the cardiacs and the neurotics (for which there was no provision in special classes in any of the cities) the median percentage for each type of atypical children was reached or exceeded by one or more school systems. This certainly shows that the median percentage is not an impossible figure to attain. Contrary to existing opinion [16:309], the percentage of the seriously crippled children in a community being cared for in special schools is greater in proportion to numbers than that of any other type, only 13.3 per cent being unprovided for in the cities which maintained special classes. However, this is not so significant in light of the lack of treatment of cripples in regular classes.

The other extreme is reached in provision for the cardiac children of the community, 95 per cent of the cardiacs in three cities being unprovided for. Equally significant is the fact that 82.1 per cent of those with seriously defective hearing are not provided for in seven cities maintaining special classes. As the lowest percentage instead of the median percentage is used in the case of truants and delinquents, there are probably numbers of them unprovided for at present.

In the school systems visited, greatest provision is being made for the delinquents, speech defectives, visual defectives, orthopedic defectives and mentally subnormal, and the least provision is being made for the neurotics, cardiacs, hearing defectives, cases of lowered vitality, and the mentally superior.

The fact that over 66 per cent of atypical boys and girls are not given the special facilities they need has important implications for school administrators. If, instead of the median percentage of 11.21, we were to use 8.74 per cent, which is the greatest percentage of the school population given special care by any of the cities visited (see Table III, Cleveland), the average school system investigated would be caring for 44.2 per cent of its atypical children. In addition, the fact that very few rural communities provide specifically for any atypical children, and then only for the subnormal group, shows the inadequacy of the existing school facilities.

In a study of the number of pupils per teacher in New York State based on an estimate of two per cent of all children of school age as probable special class pupils (mental defectives), Coxe[3] found that in first class cities there was one special teacher for every 526 pupils; in second class cities there was one special teacher for every 441 pupils; in third class cities there was one special teacher for every 646 pupils, while in villages there was one special teacher for every 4,685 pupils. However inadequate provision for mental defectives might be in cities, there were about nine times as many in proportion to numbers unprovided for in villages.

Emily A. Pratt,[4] in an investigation relative to the provision for visual defectives in the public schools of New York State,

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[3] Coxe, W. W., Director of Division of Tests and Measurements, State Department of Education, Albany, N. Y. (Interview)

[4] Pratt, Emily A., M.D., Specialist in Eyes and Ears, State Department of Education, Albany, N. Y. (Unpublished data furnished the author)

TABLE IV

EXTENT TO WHICH EACH OF EIGHTEEN SCHOOL SYSTEMS VISITED EXCEEDS OR IS EXCEEDED BY THE MEDIAN PERCENTAGE OF SCHOOL POPULATION WHICH SHOULD BE IN SPECIAL CLASSES *

Type of Atypical Children	Median Percentage Table II	Deviation from Standard, of Average of Each City	Percentage Not Provided for in Cities	Philadelphia	Detroit	Pittsburgh	Cleveland	Baltimore	Buffalo	Rochester	Toledo	Trenton	Harrisburg	Lancaster	Montclair	Poughkeepsie	Hudson	West Chester	Summit	Tarrytown	Arlington
Truants and delinquents	.40	......	0.0	......	– .22	......	+ .44	– .18	+ .21	– .28	......	......	......	......	......	......	......	......	......	......	......
Speech defectives	2.60	– .96	36.9	–1.21	......	–1.77	......	......	– .09	–1.69	......	......	......	......	–2.31	......	......	......	......	......	......
Visual defectives	.22	– .09	40.9	– .14	– .30	......	......	– .19	– .16	– .13	– .04	......	......	......	+ .35	......	– .03	......	......	......	......
Orthopedic defectives—																					
Total	.52	– .26	50.0	– .27	– .13	– .46	– .35	– .24	– .29	– .21	– .05	......	......	......	+1.27	......	......	......	......	......	......
Special schools	.30	– .04	13.5	– .05	+ .90	– .24	– .18	– .02	– .07	– .01	+ .17	......	......	......	– .3	......	......	......	......	......	......
Mentally subnormal	4.70	–2.56	54.5	–1.2	–2.60	–3.41	+1.59	–3.43	–2.88	–1.49	–3.17	–2.52	–3.93	– 3.81	–2.56	–2.90	–2.99	– 3.84	–3.48	–1.27	–2.52
Cases of lowered vitality—																					
Total less cardiacs	1.25	– .84	67.2	–1.01	– .52	–1.10	– .64	– .80	– .90	– .85	–1.05	......	– .48	......	–1.22	......	+4.31	......	......	......	......
Hearing defectives (including part-time classes)	.39	– .32	82.1	– .33	– .24	......	– .28	– .36	......	– .31	– .31	......	......	......	+ .03	......	......	......	......	......	......
Mentally supernormal	1.75	–1.51	86.3	–1.63	......	......	–1.25	–1.61	......	–1.57	......	......	......	......	......	......	......	......	......	......	......
Cardiacs	.60	– .57	95.0	– .59	......	......	– .55	– .58	......	......	......	......	......	......	– .55	......	......	......	......	......	......
Total of all types	11.21	–7.46	66.5	–6.46	–7.37	–9.67	–2.47	–8.77	–8.04	–6.81	–8.75	–9.03	–9.68	–10.32	–6.20	–9.41	–3.60	–10.35	–9.99	–7.78	–9.03

* Data from Tables II and III.

found that exclusive of the cities of Rochester, Buffalo, and New York only 20 out of a possible 142 classes had been established in counties.

Data on other types of special education would undoubtedly show the same increasing inadequacy of provision as a community becomes more rural.

TABLE V

ADEQUACY OF SPECIAL CLASS PROVISION FOR VISUAL DEFECTIVES IN NEW YORK STATE

	Cities	Villages	Districts
Number of cases reported to State Department as required by law	398	88	139
Number of cases which should have been reported on a basis of one visual defective for every 500 school children	594	209	831
Percentage discovered and reported	67.0	42.1	16.7

TABLE VI

PERCENTAGE OF SCHOOL POPULATION BEING PROVIDED FOR IN SPECIAL CLASSES IN PENNSYLVANIA *

Type of Class	Number of Classes	Total Number at Maximum Class Size	Percentage of School Population
Orthogenic backward	165	4,125	.30
Speech correction	7[1]	1,190	.10
Nutrition and open-air	13	325	.02
Orthogenic disciplinary	1	20	.002
Blind	2	20	.002
Deaf (includes partially deaf)	3	20	.002
Orthopedic	3	75	.006
Nutrition and tuberculosis	......	....	....
Sight-saving	......	....	....
Cardiac	......	....	....
Restoration	......	....	....
Non-English Speaking	......	....	....
Total	194	5,775	.432

* Data from the State Department of Education.

[1] Number of teachers.

Edna Kugler[5] furnished the author with data on special education in the State of Pennsylvania, exclusive of Pittsburgh and Philadelphia.

From the percentages shown in Table VI, it is apparent that provision for atypical children in Pennsylvania is negligible except in large cities.

Wisconsin in 1927-28 had the enrollment in special classes for handicapped children indicated in Table VII.[6]

Pennsylvania, in special provision for 0.43 per cent of the school population, and Wisconsin, in special provision for 1.4 per cent of the school population, fall far short of the 11.21 the author found as the probable percentage that should be provided for in special classes for atypical children.

TABLE VII

PERCENTAGE OF SCHOOL POPULATION BEING PROVIDED FOR IN SPECIAL CLASSES IN WISCONSIN *

Classification	Total Number Enrolled	Percentage of School Population
Defective speech	5,400	1.04
Defective mentality	1,242	.24
Defective hearing	377	.07
Crippled	185	.04
Defective vision	56	.01
Total	7,260	1.40

* Data from Annual Report, 1927–28.

Dortha Jensen, in a questionnaire study, found that only six cities out of 25 replying, with a population less than 20,000, and only 18 cities out of 127 replying, with a population between 20,000 and 50,000, made any provision for gifted children either in the regular classroom or in special classes. [153]

The National Commission for the Prevention of Blindness estimates that although there were 265 sight-saving classes in the United States in 1926, 4,735 additional classes were needed. [183]

Hannah Protzman estimates that only 50 per cent of the mental defectives in Ohio are being given training in special classes.

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[5] Kugler, Edna, Assistant Director of Special Education, State Department of Public Instruction, Harrisburg, Pa. (Interview)

[6] Thomas, S. M., *Education in Wisconsin.* Biennial Report, p. 141, 1926-28, State Department of Public Instruction, Madison, Wis., 1928.

[141] It has been estimated that there are 900,000 mental defectives in the public schools of the United States who should be in special classes but are not and who, as a result, are only marking time in school systems as organized to-day.

All indications point to the fact that our present provisions for public school children who deviate from the normal are wholly inadequate.

Future Trends in Numbers

There are three major factors which influence the numbers of atypical children who may require special education in the future, namely: heredity, which may be the direct inheritance of traits, or which may be the inheritance of a constitution which predisposes one to the acquisition of physical defects; environment, which includes such factors as the physical features of the region, the type of community, the home conditions, or the type of education offered; and preventative social and medical measures, either by the school or other agencies. The first is subject to little or no control except in so far as the environment may be controlled to prevent the traits from appearing; the second is subject to partial control to the extent that social progress is advanced, and the third is hampered only by the limitations of science itself—an unpredictable factor in the light of the extraordinary advances science has made in the past twenty-five years. The rest of this section will deal with the probable future numbers in each classification of atypical children in the light of the above criteria.

The Mentally Atypical. Hanna says that 90 per cent of feeble-mindedness and epilepsy is hereditary. [111:3] Pressey [64:226] and Tredgold [134:462] confirm this by stating that, with the possible exception of cretinism, feeble-mindedness cannot be cured, although the condition can be made less of a social menace by proper training. Wallin states that the amount of improvement or normalization which can be produced by somatic treatment (that is, removal of remediable defects) is still in dispute. [65:81] These studies, which apply to mental defectiveness as defined by the social criteria, and investigations by Hoefer and Hardy [71] showing that there is little tendency toward improvement either of the Intelligence or of the Educational Quotient of those who are mentally defective following upon improvement of their physical condition, point to the conclusion that mental defectiveness, as defined under either the social or psychological criteria, is hardly likely to disappear from the race, at least for several generations to come.

Wood and Rowell quote the National Committee for Mental Hygiene as holding the opposite view, i.e., that " . . . in a large majority of cases, the mentally abnormal are not born mentally abnormal, but through experiences acquire certain emotional habits which become fixed whether good or bad."[7] While there is no question of the fact that emotional habits are acquired, the weight of evidence seems to point to the conclusion that the level of mentality is for the most part determined by heredity. There was an increase in numbers in state institutions for mental defectives from 42,164 in 1923 to 52,043 in 1927. While it may be argued that this is indicative of a general increase in the numbers of mental defectives, it is probable, rather, that the increase is due to more accurate means of finding such persons. [123]

According to Table II, 4.7 per cent of the school population are mentally subnormal, of which 2.0 per cent are mentally defective. Provision for the other 2.7 per cent which are borderline or backward, will have to be made in special classes until such a time as our educational procedure is modified to the extent that they can receive adequate training in regular classes. The minimum number of mentally deficient children and epileptics who may need special class provision in the future is 2.0 per cent. The number of mentally supernormal children would be essentially the same under the theory of a normal distribution of intelligence and might conceivably increase to a marked extent as the idea of education for leadership as apart from ordinary education is accepted in educational practice. In the future, the numbers of atypical children to be educated in special classes probably will be 2 per cent each for the mentally deficient and mentally supernormal, and a percentage for the backward and bright varying with the education offered in the regular class. The total percentage of mentally atypical children who should be in special classes will probably not exceed 5 per cent.

The Physically Atypical. The Massachusetts census from

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[7] Wood, Thomas D., and Rowell, Hugh Grant, *Health Supervision and Medical Inspection of Schools*, p. 114. [305]

1909 to 1922 tends to show that blindness is decreasing. [182:38] Winifred Hathaway states that most of the causes of blindness are preventable and that the improvement in the physical condition of the school is the determining factor. [178] Alexander says that the large percentage of children in the German *Volksschule* who have weak eyes is largely due to poor food, poor ventilation in the school, and poor lighting in the homes. [2:132]

Prevention, then, will probably eliminate much of the necessity for sight-saving classes in the future.

Best found that congenital deafness is decreasing relatively among the population only at a very slow rate, and that deafness in general is tending to decrease. In another chapter he says that 1/3 to 2/5 of the cases are congenitally deaf and that 30 to 40 per cent of adventitious deafness is preventable by present known means. [204:16; 62] It is probable that the future will see an actual decline in the number of hearing defectives of not less than 40 per cent, making possible a corresponding reduction in special class provisions.

Defective speech is not hereditary but a child may inherit a congenital weakness in the speech faculty or a weakened Broca's evolution, which may predispose him toward defective speech. [251] Blanton and Blanton state that preschool, kindergarten, and first and second grade training to set correctly the growing speech reactions and eliminate the faulty ones, would make unnecessary a large part of the individual corrective work now being carried on. They quote Terman as saying that "a large majority of speech defects could be readily and inexpensively cured." [240:7; 102]

Horn found there was no uniformity of procedure but there was a large percentage of cures in the seven cities he investigated. On the basis of his data,[8] the author estimated that 75 per cent of the boys and girls given remedial treatment were cured although Horn says the figures are not comparable because of lack of definition of the "speech defective."

Clara Stoddard reports 42.0 per cent correction in Detroit for the years 1927 and 1928.[9]

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[8] Horn, John Lewis, *The Education of Exceptional Children.* Percentage cured: Seattle, 45; Chicago, 60; Pittsburgh, 75; Boston, 92; New York and Buffalo, 95; Denver —monotony, hasty speech, slovenly speech, 90—lisping, 75—nasality, 50—stuttering, phonetic defects, 40—stammering, 20. [16]

[9] Stoddard, Clara B., Supervisor of Speech Education, Detroit Public Schools, Detroit, Mich. (Data furnished the author by correspondence)

Less than 50 per cent of those now requiring special instruction in part-time classes for speech defectives will need to be thus provided for in the future.

Physical rehabilitation, reduction of epidemics, and preventive medicine, are factors that tend to reduce the number of crippled boys and girls needing special care. Infantile paralysis is the only disease which shows no tendency to decrease, but even in certain cases of infantile paralysis, muscular power has been increased. [271] Cleveland finds it necessary to transport a decreasing number of crippled children year by year. Monger estimates that 62.6 per cent of the causes of crippled conditions in children can be prevented. [270]

A conservative estimate of the percentage of crippled boys and girls, now requiring special class facilities, who will need this provision in the future, is 50 per cent.

The Metropolitan Life Insurance Company in a Statistical Bulletin, says that the time is in sight when tuberculosis will assume a relatively minor position as a cause of sickness and death. [22] Emerson says: "Tuberculosis has been pushed from its place as arch-executioner. In its place, in most parts of the country, is heart disease, now the chief cause of death in the United States. Fortunately, heart disease is often curable."[10]

McCullock says that heart disease can largely be prevented through control and care of all communicable infections, through supervision of all rheumatic "contact" cases, and through the promotion of measures which lead to good health. [297]

Malnourishment, uncomplicated by tuberculosis and physical defects, is largely a matter of correct nutrition and from this standpoint should be an ever decreasing problem. With the exception of cardiacs, the reduction in the number of classes necessary for cases of lowered vitality ought, therefore, to be close to 50 per cent in the near future. A factor which will further decrease this is the general extension of the health education program to include all children in a school system.

The Temperamentally Atypical. Neurosis is a product of the world we live in and we can look for a reduction in percentages of children who will have it only in the emotional stability of the general population—a rather doubtful prospect. Pressey and

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[10] Emerson, Haven, M.D., *"Heart Disease Communicable? Curable? Preventable?"* Reprinted from the *Survey Graphic* for November, 1924, for the American Heart Association, New York. [287]

Pressey venture the opinion that 25 per cent of the general population go through a neurotic episode around adolescence. [64:262]

Elizabeth Munger proposes that if children were properly classified in the kindergarten, and adequately studied from the point of view of the physician, the psychiatrist, the psychologist, and the visiting teacher, and if specific recommendations could be made, carried out, and checked up at designated intervals all through the child's career, the school would then become a social agency for the prevention of delinquency and crime. [318:181]

Reed states that ". . . school and delinquency surveys are piling up evidence which shows close relationship between retardation and truancy, truancy and delinquency, and delinquency and crime."[11]

Robinson attributes most of the delinquency and problem cases in the public schools to improper grouping and lack of adjustment of the curriculum to the child. He states that 80 per cent of the problem cases in junior high school ceased to be problems when their educational needs were met and that 25 per cent of the delinquents were feeble-minded. [126]

Detroit attributes most of the malbehavior to early home treatment or failure to correct physical defects, and holds that the necessity for ungraded rooms for truants and delinquents will not cease entirely. [10:18] [11:79]

It is probable that the future will see the necessity for special provision for less than 15 per cent of the truants and delinquents now requiring education in special classes.

All of the above estimates are based on the median percentages for atypical children (see Table II) and are not based on the present provision for atypical children. Most school systems will have to provide more special class and school facilities in order to take care of boys and girls who might profit by such education, but, with the exception of neurotics, the actual numbers to be provided for may be decreased in the future to the extent of 20 per cent for cardiacs, 30 per cent for the mentally subnormal, 40 per cent for deafened children, 50 per cent for speech defectives, cripples and cases of lowered vitality, 60 per cent for visual defectives, and from 85 to 100 per cent for truants and delinquents.

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[11] Reed, Anna Y., *Human Waste in Education*, p. 66. [30]

THE STATE'S MINIMUM PROGRAM

Mort has summarized the responsibility of the state for the support of education as follows: "The state should accept the responsibility for seeing that a satisfactory program of education is offered to all the children within its bounds and then should, in a businesslike manner, set about the task of distributing the burden of such a program in such a way that it will fall upon the people in all localities in accordance with their ability to pay."[12]

This section is concerned primarily with the first part of the quotation, i.e., the equality of educational opportunity. Certainly, a satisfactory program must be interpreted to mean a program that will permit of the maximum development of a child's capabilities. There are, however, effective physical, mental and social bars to a child's realizing this ideal in the regular classroom.

A satisfactory program for these children must, therefore, include special class provisions, some type of individual instruction, or institutional care. The latter is not satisfactory because of opposition of parents to having their children institutionalized and because such provision means lack of social contacts.

The guarantee of equality of educational opportunity to these boys and girls, then, necessitates the state's setting aside a certain percentage of the cost of the minimum program for the education of such children who cannot profitably be educated in regular classes. As indicated in Table II, the percentage of such children will probably exceed 11 per cent, although the percentage is subject to considerable error in the original data. However, the inclusion in the state's minimum program of adequate sanitation and building codes, and the setting up of an adequate supervisory program will materially reduce this percentage, as indicated in the section last preceding. This percentage alone does not determine the percentage of the cost of the minimum program which may be set aside for special education of atypical children. The smaller class size, the scarcity of teachers and the correspondingly higher salaries, and the demand for specialized equipment for some of the classes make the cost per pupil higher than for education in regular classes.

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[12] Mort, Paul R., *An Analysis of the Problem of Distributing State Subsidies to School Districts.* Report of the Commission to Study the Distribution of State Subsidies to School Districts, Commonwealth of Pennsylvania, 1927, Part II, p. 33.

Just as corrections are made on account of transportation and cost of living in distributing state aid,[13] so corrections must be made for the increased cost of special classes in computing the percentage of the cost of the state's minimum program that may be set aside for the education of atypical children.

Table VIII shows the total per capita cost, the per capita cost for each type of special education and the ratio of the two for seven school systems. It is difficult to secure per capita costs for special types of education because many of the school systems do not account for their special classes separately. Since some objects are not considered, there are inaccuracies in each instance, so the resultant dollar cost is not a significant figure. However, the average of the ratios for each type of special class gives a working basis for weighting the percentages of school population which should be in each type of special class.

Table IX shows these percentages corrected for a possible reduction in number of atypical children of each type as brought out in the section last preceding, the percentage each type is of the total corrected percentage, the average cost ratio for each type of atypical class, and the weighted cost ratio for each type of atypical class. The total shows that eight per cent of the school population should ultimately be specially provided for and that the weighted cost per pupil of providing such education will be 1.4431 times the regular cost per pupil.

The percentage of the cost of the minimum program which the state may set aside for the education of 8 per cent of the boys and girls in the school population needing special provision may be determined by the following formula, which makes a correction for the increased cost of such education as determined in Table IX:

$$\frac{\text{(Percentage of special class children} \times \text{weighted ratio of cost of special education to cost of regular education)}}{\text{(Percentage of normal children)} + \text{(percentage of special class children} \times \text{weighted ratio of cost of special education to cost of regular education)}} =$$

the percentage of the cost of the minimum program to be set aside for the education of atypical children

In a state which has a weighted ratio of cost of special education to regular education as in Table IX, the application of the formula would be as follows:

$$\frac{.08 \times 1.4431}{(.92 \times 1.0) + (.08 \times 1.4431)} = .1115$$

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[13] *Ibid,* p. 42.

TABLE VIII

RATIO OF PER PUPIL COST OF SPECIAL EDUCATION TO TOTAL PER PUPIL COST FOR EACH OF THE TYPES OF ATYPICAL CHILDREN IN SEVEN CITIES VISITED

City	Total per Pupil[1] Cost of Education	Mentally Subnormal		Mentally Supernormal		Visual Defectives		Hearing Defectives		Orthopedic Defectives		Cases of Lowered Vitality		Truants and Delinquents	
		Per pupil cost	Ratio	Per pupil cost	Ratio	Per pupil cost	Ratio	Per pupil cost	Ratio	Per pupil cost	Ratio	Per pupil cost	Ratio	Per pupil cost	Ratio
Philadelphia[2]	$ 78.91	$124.95	1.58	....	....	$247.37	3.13	$267.57	3.39	$204.41	2.59	$162.24	2.05	$146.13	1.85
Detroit[3]	88.40	140.10[4]	1.58	....	....	234.80	2.66	378.42	4.28	297.13	3.36	157.72	1.78	144.28	1.63
Cleveland	110.52	139.73[5]	1.26	149.77	1.36	426.36	3.86	463.71	4.19	428.88[6]	3.88	146.91	1.32	198.41	1.79
Rochester	141.08	146.04[7]	1.03	110.32	.78	205.54	1.46	229.78	1.63	197.15	1.40	226.13	1.60	150.22	1.06
Toledo	105.67[8]	163.24	1.54	....	....	305.85	2.89	335.90	2.12	329.49	2.11	122.94[9]	1.16	....	....
Montclair	138.39	200.96	1.45	....	....	....	....	....	....	....	....	....	....	....	....
Summit	121.32	201.66	1.66	....	....	....	....	....	....	....	....	....	....	....	....
Average ratio of	cost		1.44		1.07		2.80		3.12		2.67		1.58		1.58

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[1] Includes elementary schools and junior and senior high schools.
[2] Annual Report of the Secretary and Business Manager, 1927–28.
[3] Annual Report of the Superintendent, 1927–28.
[4] Defective "A," $129.88; defective "B," $149.92; special preparatory, $130.89.
[5] Over-age, 143.26; border-line, 117.53; pre-primary, 115.49; opportunity, 116.13; mental defectives, 199.02.
[6] Bus transportation, 108.06.
[7] Mental defectives, 128.70; backward, 97.20; pre-vocational, 255.03.
[8] From the *World Almanac*, 1929, p. 386.
[9] Estimated.

TABLE IX

WEIGHTED ATYPICAL CLASS COST RATIO FOR TYPES OF CHILDREN NECESSITATING SPECIAL CLASS PROVISION AND THE PERCENTAGE EACH WEIGHTED COST RATIO IS OF THE TOTAL COST RATIO

Type of Atypical Children	1 Medium Percentage from Column 5, Table II	2 Percentage of Possible Reduction	3 Correction Column 2 x 1	4 Minimum Percentage to be Provided for Columns 1–3	5 Ratio Each Type Is to Total in Column 4	6 Average Ratio of Cost of Special to Regular Classes, Table VIII	7 Weighted Ratio of Cost Column 5 x 6	8 Percentage Each Type Is of Total in Column 7
Mentally subnormal and epileptics	4.78	.30	1.43	3.35	.4186	1.44	.6028	41.77
Mentally superior	1.75	...	....	1.75	.2187	1.07	.2340	16.22
Visual defectives								
Blind	.02	...	....	.02	.0025	2.80	.0070	.49
Impaired vision	.20	.60	.12	.08	.0100	2.80	.0280	1.94
Hearing defectives								
Deaf	.06	.40	.02	.04	.0050	3.12	.0156	1.08
Impaired hearing—Special Class	.30	.40	.12	.18	.0225	3.12	.0702	4.86
Impaired hearing—Part Time class	.03	.40	.01	.02	.0025	1.00	.0025	.17
Speech defectives	.30	.50	.15	.15	.0188	1.30[1]	.0244	1.69
Orthopedic defectives	.30	.50	.15	.15	.0188	2.67	.0502	3.48
Part-time class	.22	.60	.13	.09	.0113	1.30[1]	.0147	1.02
Cases of lowered vitality	1.25	.50	.63	.63	.0600	1.58	.0948	6.57
Cardiacs	.60	.20	.12	.48	.0788	1.58[2]	.1245	8.63
Neurotics	1.00	...	....	1.00	.1250	1.30[3]	.1625	11.26
Truants, delinquents and incorrigibles	.40	.85	.34	.06	.0075	1.58	.0119	.82
Total	11.21			8.00	1.0000		1.4431	100.00

[1] Estimated on the basis of greater teacher cost.
[2] Same as Cases of Lowered Vitality.
[3] Estimated on the basis of smaller class size.

The state would, therefore, under this plan, set aside 11.15 per cent of the cost of the minimum program to provide special classes in cities, and county consolidation or individual instruction or treatment in rural areas. In the event of consolidation, the amount set aside should be corrected by the index of transportation as determined in that state. If any community provided education for some types of atypical children and not for others, the State Department could determine its allocation by finding the sum of the percentages of each weighted ratio, as shown in Column 8 (Table IX), for each type of special education provided and multiply this by the total percentage as found in the formula to determine what percentage of the minimum program should be set aside. Regulations for teachers, size of class, supervision, and special materials, equipment and instruction must of course be set up as a part of the minimum program.

If a city of 50,000 school children provided for all but the cardiacs, neurotics and delinquents, they would have set aside for the education of their atypical children, out of the total cost of the minimum program, 79.29 per cent of 11.15 or 8.84 per cent.

In the application of this formula to any given state it would only be necessary to determine the average ratio of cost of each type of special education to regular education in that state, and substitute these ratios in Column 6, Table IX, to get the weighted cost ratio used in the formula. As actual numbers of atypical children are determined by an accurate state census, using standardized terminology, the percentages in Column 4, Table IX, may be changed to conform to the situation found.

Aside from the inaccuracies in the percentages of school population which are atypical, there are several criticisms which may be made of the procedure outlined above. L. O. Smith says that the cost of educating gifted children is less in the long run because of the attendant acceleration. [158] An acceptance of this thesis is based upon the principle that acceleration is better than enrichment—a principle that as yet remains to be substantiated. Norris [220] and Oberholtzer [222] maintain that money spent to discover and to correct defects of hearing is a paying proposition from a purely monetary standpoint. While this may be true over a long period of time, it is no less true for any other type of education and does not materially affect the cost of providing such education in the community. Orleans holds that the extra cost of the education of cripples is in part compensated for by the rapid progress they make. [273:12] Retardation is costly from a monetary standpoint only under the assumption that the child retarded will continue in school beyond the compulsory age limit, an assumption which is not borne out in practice. As a matter of fact, it is less expensive to keep a child in the elementary grades, however undesirable such practice may be educationally.

Moehlman says: "In our democracy, the right of every child to a free public education in accordance with his native ability, in order that he may have equality of opportunity in the struggle for the good things of life, is no longer seriously questioned."[14]

The recognition of the education of atypical children as an integral part of the state's minimum program will do much to accomplish this end.

SUMMARY

1. The determination of the incidence of different types of atypical children is exceedingly difficult because of inaccurate measuring instruments, lack of standardization of definition, and regional differences.
2. More than 11 per cent of the school population deviate so much from the normal as to require special class facilities.
3. Forty-six per cent of school population deviate so much from the normal as to require remedial treatment in regular classes.
4. None of the school systems visited provided for as many children in atypical classes as might be expected from the results as shown in the author's study of probable numbers.
5. There is a great inadequacy of provision for atypical children in the three states concerning which data were obtained, especially in the smaller cities and rural communities.
6. Through more efficient preventive and remedial measures in the school and through scientific discoveries it will be possible in the future to reduce the number of cardiacs by 20 per cent; the number of the mentally subnormal by 30 per cent; the number of hearing defectives by 40 per cent; of speech defectives, cripples and cases of lowered vitality by 50 per cent; of visual

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[14] Moehlman, Arthur B., *Child Accounting*, p. 41. Courtis Standard Tests, Detroit, Mich., 1924.

defectives by 60 per cent; and of truants, incorrigibles and delinquents by 85 to 100 per cent. It is doubtful whether or not the number of neurotics can be reduced.

7. Special provision for the education of atypical children is properly a part of the state's minimum program and, on the basis of the data used in this study, the state should set aside 11 to 12 per cent of the cost of the minimum program for the education of 8 per cent of the boys and girls who may need special educational facilities.

8. The percentage which any particular state should set aside is dependent upon the weighted ratio of cost of education of atypical children in that state.

9. The percentage of the cost of the minimum program to be set aside is determined by the formula:

$$\frac{\text{(Percentage of special class children} \times \text{weighted ratio of cost of special education to cost of regular education)}}{\text{(Percentage of normal children)} + \text{(percentage of special class children} \times \text{weighted ratio of cost of special education to cost of regular education)}} =$$

the percentage of the cost of the minimum program to be set aside for the education of atypical children

10. The state department of education should determine the amount to be set aside for those communities which make special provision for only some of the types of atypical children, on the basis of the ratio of the weighted cost ratio of the types provided, to the total cost ratio of educating atypical children in special classes.

CHAPTER IV

SELECTION, DIAGNOSIS AND ASSIGNMENT

THE MENTALLY ATYPICAL

The classification of types of atypical children serves no useful purpose unless all such children in a school system are discovered, unless all necessary information about them is secured and interpreted in the light of each individual's needs, unless they are assigned to such place in the school organization as will permit of their maximum development, and unless cases are adequately followed-up,—in school, constantly, and out of school until such time as they may become independent of supervision—which in some cases will mean a lifetime of at least partial after-care.

The organization which will make this possible in a school system will vary widely according to the size of the community, a fact which has been given very little consideration in literature on the subject. There are certain basic principles which will permit of efficient selection even in the smallest rural school system where an elaborate organization is economically unsound and impracticable. Following a brief discussion of the make-up of clinics, this chapter and the succeeding two chapters will be concerned with methods of selection, diagnosis and assignment of atypical boys and girls as suggested by the literature and as found in the author's personal investigation.

One of the most potent forces in preventive and remedial medicine and also in mental hygiene is the clinic, where the combined opinions of specialists, based on a great variety of data about each individual, is playing an increasingly important part in social progress. The highly specialized professional nature of such an organization has necessarily limited its activity to large cities and wealthy suburban districts except in a few cases where the state has properly taken this phase of the work over on a state-wide basis. Mateer stated the following aims that clinical psychology must meet: first, it must be scientific; second, it must be thorough; third, the work must be preventive; fourth, whenever possible, the work must be corrective; fifth, the work must be educative; and, last, the handling of an individual must be economical.[1]

These aims might well be established for any clinic whether medical, social or mental. As a matter of fact, it would seem that a psychologist would have a place on every clinic because any disability is apt to produce abnormal or unhealthy mental conditions. In situations where clinics are feasible, two types of clinics could care for atypical children; the psychological clinic for the mentally and temperamentally atypical, and the medical clinic for the physically atypical. They are by no means mutually exclusive and in many instances are joined to form a general child guidance clinic. The psychological clinic is usually composed of a psychologist, or one who has had training in psychology equivalent to that required for a Ph.D., in addition to clinical practice; a psychiatrist, or a physician qualified to practice medicine who has had some training and experience with mental abnormalities; a social worker, preferably one with psychiatric experience and training; a pediatrician, or a physician who has specialized in children's diseases; a psychometric examiner, or one who has had experience in the giving of individual psychological tests to determine mental age; and trained observers for the accurate recording of data. [18] [93:19] [114:283] The latter should include a stenographer in order that reactions not anticipated by tests may be accurately recorded. [309:594] Coxe questions the necessity for a psychiatrist in the diagnosis of mentally atypical children, saying that in his experience ". . . the psychiatrist has contributed to the understanding of selection in less than three per cent of the cases."[2]

The school medical clinic should have the advantage of all the services this age of specialization affords. The school physician with adequate educational training, in coöperation with the psychologist and nurse, should be the core of the clinical staff. For each type of defect, the specialist should be called into consultation: the ophthalmologist for visual defectives; the otologist for hearing defectives; the orthopedic surgeon for cripples; the psychiatrist for speech defectives; the specialist in respiratory diseases for cases of lowered vitality, and the specialist in heart diseases for cardiacs.

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[1] Mateer, Florence, *The Unstable Child*, p. 27. [317]

[2] Coxe, Warren W., Director of Division of Tests and Measurements, State Department of Education, Albany, N. Y. (Interview)

That this is an ideal rather than an actuality is indicated by the fact that in only three of the largest cities visited, (A, B, D), were the services of all these specialists available in clinics, and then only to a limited extent. Because of the limited extension of clinical service, most school systems will make use of alternative methods which employ the more important factors of diagnosis. Ultimately, we shall look for clinical service in the diagnosis of all atypical children.

THE MENTALLY SUBNORMAL

Selection. There are two classes of mentally subnormal children who need special class or individual attention in order that they may fully utilize their capabilities,—the mental defectives and the backward. There is no definite line of demarcation between them nor are they mutually exclusive. The discovery of these cases is accomplished through teacher judgment, studies of grade retardation, achievement tests, group tests of intelligence, or a combination of these agencies. The largest system visited (A) depended upon the principals, social workers, and district superintendents for initial selection of mental defectives on the basis of failure in school, conduct, need for vocational guidance, etc. The seven next largest systems visited used group tests for the initial selection, in two cases also selecting those who were two or more years retarded in school progress. The rest of the school systems visited selected pupils initially on the basis of the recommendation of the teacher, supplemented in a few cases by those retarded three or more years in school progress. Two of the systems, (H, K), questioned the reliability of the selection by teacher judgment. In all other cases where the selection was made on the basis of teacher recommendations, the results were held to be very satisfactory. Anderson and Coxe question the use of the teacher's recommendation in initial selection because of the tendency to include disciplinary problems. [85] [95:8] Hodgkinson showed that teachers as a rule do not possess the knowledge which is required to report such cases. [15:108] Patton says that the recommendation of the teacher should not be the only basis or the main basis for selecting special class children. [122] The Canadian Council on Child Welfare conducted an experiment in which they gave instructions to teachers in the proper method of selecting children without giving standardized tests, and then compared the appraisements assigned 400 children with those found by the Stanford-Binet Test. The average difference was less than 5 per cent. [7:10] From this result it would appear that the reliability of the teacher's selection may be dependent upon the knowledge she has of the factors involved.

Considering the economy and speed of administering group intelligence tests, such tests are probably the best single means of discovering boys and girls who are subnormal. Pintner says, "The group method does not give us all the information gleaned by the expert clinician in his individual examination, but it can give a very reliable intelligence rating."[3]

It is especially valuable, furthermore, in that it is applicable to school systems regardless of size.

Two group tests are more valuable than one, but if they disagree, additional evidence is necessary. [69] Coxe and Cornell suggest that all those whose Intelligence Quotients on the individual test fall below 70 be selected for intensive study, supplemented by an additional list of those who have been referred by the teacher. [9] [95:11] The Annual Report of the Superintendent of Schools of New York recommends that individual examinations be given to all those whose Intelligence Quotients fall below 70 on the group examination; all pupils below the 3A grade; certain others who were reported for examination by the school principal; those who showed marked irregularity in the group examination; those of foreign birth who had been in school long enough to have learned English but who failed to make satisfactory progress; and those suffering from partial or complete deafness. [26:83] If only those with an I. Q. of 70 or less were selected, a great many children who might profit by special class instruction would likely be missed. Backward children whose Intelligence Quotients fall between 70 and 85 just as surely need individual diagnosis as those who are definitely mentally defective.

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[3] Pintner, Rudolph, *Intelligence Testing*, p. 49. [75]

Individual intelligence tests should be given to all those who have been referred by the initial selective process.[4]

All school systems visited gave individual tests to candidates for special classes. In the larger systems these tests were given by psychologists or psychometric examiners, but in the six smallest systems visited they were given by the special class teacher who had had some special training. These results in five of the school systems visited (J, K, M, N, O) had been checked by the State Mental Clinic and found to be in close agreement. Terman states that countless teachers and principals have attained a fair mastery of the Binet method by their own efforts. [77:24] Mort, however, says it is rare that a teacher is trained sufficiently to give individual intelligence tests. [24:266] It is not administratively feasible for smaller school systems to have a psychologist on the staff and it would seem that the special class teacher could be trained to give intelligence tests efficiently, if she did not base her diagnosis on this factor alone.

Porteus criticizes the Binet Mental Age in that it favors certain types of ability, i. e., literary as against manual and industrial. [124:187] Brown expresses a need for a definition of intelligence that will properly weight abstract, non-verbal and mechanical ability. [67] Wallin stresses the importance of supplementing the scale by motor tests in the case of linguistically handicapped children. He also advises the use of more than one Binet-Simon examination in each case, not because of inherent defects in the scale itself, but because of its administration. [65:157] [127] Porteus does not agree with Mateer that "scattering" in the Binet test of more than four years is a reliable indication of psychopathy. [124] Merrill showed that there was a tendency for retarded children to scatter over a slightly wider range of age-levels on the Binet tests than do normal children and markedly less than the superior children. [119] Brief tests requiring ten or twenty minutes, even where they show a fairly high correlation with more thorough intelligence scales, are too unreliable to be depended upon for the measurement of individual pupils. [77:23] While the Stanford Revision of the Binet-

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[4] For a list of group and individual tests and a discussion of the merits of each, the reader is referred to the following books:

1. Bronner, Augusta, *The Psychology of Special Abilities and Disabilities*, Appendix. [67]
2. Freeman, Frank N., *Mental Tests.* [69]
3. Pintner, Rudolph, *Intelligence Testing*, pp. 93 ff. [75]
4. Whipple, Guy M., *Classes for Gifted Children*, pp. 19-46. [161]

Simon test is considered standard in the United States to-day, all of the school systems visited which maintained psychological clinics supplemented it with individual tests of manual, motor or mechanical ability (A, B, C, D, E, F, G, H).

Porteus states that a Binet I. Q. of 70 or less may be regarded as presumptive evidence of feeble-mindedness but by no means as the final diagnostic proof. [124:19] The regulations of the New York State Department of Education provide that children with I. Q.'s of 75 or less are eligible for special classes.[5]

There is a wide divergence of practice in the systems visited, five using an I. Q. of 70 (D, G, H, J, P), three using 75 (I, M, Q) and one each using 80 (C) and 90 (E). School system F selected all children 70 or below for their classes for mental defectives and all children 85 or below for their backward classes. The standard of selection used should be high enough to include all those who might profit by special classes.

Guibord concluded that the Stanford-Binet tests are a very good but not a perfect basis for the prediction of success or failure in high school and that the I. Q. is fairly constant. [12:338] Wallin emphasizes its importance: "The Binet-scale, after withstanding years of trenchant criticism, continues to occupy a position of conceded preëminence."[6] He also emphasizes the fact that in psychometric examinations the first precaution is to verify the reported age.

Morgan indicates that the mental examination is the final means by which a subnormal child's mental status is gauged. [62:317]

The laws of several states definitely fix three years of mental retardation as a requirement for admission to a special class.[7] Wallin aptly criticizes these laws when he says that for a one-year-old, one year of retardation constitutes a very grave defect; for a fourteen-year-old, it is barely apparent. [65:201] Hodgkinson also criticizes these laws because of the delay in selection. [15:206] Meta Anderson, however, considers that the ideal way to select children for defective or backward classes would be to place all those retarded three years or more as indicated by intelligence tests, in classes for defectives, all those two years or more in backward classes, and all doubtful cases in observation classes. [84:5] This position is hardly tenable, however, in the light of the need for early recognition of mentally subnormal boys and girls.

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[5] Coxe. (See reference to interview, p. 52.)

[6] Wallin, John E. W., *Clinical and Abnormal Psychology*, pp. 19, 21. [65]

[7] See page 11.

Because of the fact that childhood is a plastic period when delinquency is preventable, when proper specific habits may be formed, when desirable mental attitudes may be cultivated, when normal social relationships may be begun, when the individual's potentialities for brain development are at their peak, and when good habits can, by the right kind of training, be made to precede rather than follow bad habits, early diagnosis of mental subnormality and assignment to a special class is essential to the ultimate success of that type of education.[8]

Irwin and Marks give as the principal advantage of early assignment to ungraded classes the protection of the child's disposition. [17:158] Berry estimates that 80 per cent of the mental defectives can become self-supporting if they are given the right kind of education early enough. [87] If this is true, it is in itself sufficient argument, from a social and economic point of view, to begin special class instruction during the first year of a pupil's school life. Tredgold says that if abnormal nervous states are associated with a pronounced morbid heredity, there is a strong probability that the child will turn out to be mentally deficient. [134:454] Leta Hollingworth concludes that, by the use of individual tests, one can determine objectively the individual's status in general intelligence as early as six years. [60:42] Irwin and Marks found that group tests so far devised are not very helpful in selecting mentally subnormal children in the first grade. [17] Terman suggests that when "primary" tests are used, they should be checked with a large amount of individual testing. [77:23] There is a fairly uniform agreement in the literature that the first grade should be a period of observation and investigation for all children except those with definite stigmata of mental defectiveness, and that assignment to special classes should begin with the child's entrance to the second grade.[9]

The greater number of the school systems visited permit admission to the special class at seven years of age. One system admitted none below the age of nine years (C), one set twelve years as the lower limit (P), one admitted none below the third grade (F), and two used the standard of three or more years of mental retardation, which would admit very few below the fourth grade or below the age of ten years (I, L).

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[8] [15: 8] [17: 158] [24: 30] [114: 200] [134: 466] [140: 260] [36: 2]

[9] [6: 9] [13: 12] [15: 386] [17: 31] [24: 304] [99] [126: 368] [140: 261] [305: 542]

On the whole, it would seem desirable to admit all qualified boys and girls to the special class upon completion of one year in the first grade or upon attaining the age of seven years.

Diagnosis. Freeman says, "Tests of intelligence have made the selection of feeble-minded a more nearly exact process. . . . No test of mentality pretends to reveal character traits, emotional constitution or specific vocational fitness." [10]

In the cities visited there was no consensus of opinion, or uniformity of practice as to the information necessary for adequate diagnosis in addition to mental status as measured by intelligence tests. It varies from a complete case study in school system A to an individual intelligence test alone in system N.

Table X shows the type of data used to diagnose mental subnormality in the school systems visited. Teacher judgment

TABLE X

DATA USED IN SEVENTEEN SCHOOL SYSTEMS FOR THE DIAGNOSIS OF MENTAL SUBNORMALITY

Type of Data	Total number	Rochester	Buffalo	Trenton	Philadelphia	Cleveland	Harrisburg	Detroit	Baltimore	Pittsburgh	Toledo	Lancaster	Summit	Tarrytown	Poughkeepsie	Montclair Hudson West Chester
Intelligence tests	17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Teacher judgment	11	x		x	x				x		x		x	x	x	x
Record of home conditions	8	x	x	x		x						x	x	x	x	
Psychological examination	7	x	x		x	x		x	x	x						
School record	6	x				x	x				x			x	x	
Physical examination (routine)	6	x	x	x		x	x		x							
Achievement tests	5	x		x	x	x				x						
Case record	5		x	x	x		x	x								
Social traits	3	x		x								x				
Attendance	3	x			x				x							
Estimate of principal	3					x					x		x			
Character traits	2	x										x				
Heredity and family history ..	2			x			x									
Wassermann test	2			x			x									
Special defects	1			x												
Social age	1				x											
Medical history	1													x		

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[10] Freeman, Frank N., "A Non-Technical Discussion of Mental Testing," *Education*, 47: 539-48, May, 1927. [70]

combined with intelligence tests are the two most significant factors indicated. It is surprising that family history and medical history are so little used, except incidentally. This table shows the impracticability of using all of the factors which writers on abnormal psychology suggest. If teacher judgment (which, in most cases, is based on school progress) and individual intelligence examinations are the most important factors in diagnosis, the problem of selection of subnormal children in small cities and rural districts is very much simplified.

Table XI represents the opinion of authorities as to the data essential for diagnosis. The difference in terminology alone precludes its use by any one but experts. The author has roughly classified the data into nine major headings. The most important factors as indicated by frequency of mention are individual intelligence tests, school record and history, medical examination and record, and heredity and family history.[11]

On this basis, then, the school systems visited would seem to need data on heredity and family history, and medical examinations rather than routine physical examinations. This need is definitely borne out in the discussion which follows.

That a thorough diagnosis is necessary is indicated by Tredgold when he says: "With regard to the diagnosis of mental defect, indeed, one might almost say that this generation asks for a sign, for an automatic register, a penny-in-the-slot machine, which shall infallibly diagnose mental defect—and there is no such sign." [12]

Wallin holds that ". . . an adequate mental diagnosis involves a careful analysis of an intricate network of contributing factors, often obscure and multifarious, and an evaluation of the relative rôle of the different traits." [13]

Goddard compares the diagnosis of the exceptional case, the border-line case, or the diseased child, to the physician's diagnosis of an obscure disease with complications. [59:263] Pressey and Pressey suggest that for a diagnosis of feeble-mindedness there should be marked evidence of educational inadequacy, economic inadequacy, social inadequacy, and intellectual inferiority as shown by tests of intelligence. [64:236] Coxe quotes Ethel Cor-

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[11] For case study outline see Pressey, Sidney S. and Luella C., *Mental Abnormality and Deficiency*, p. 315. [64]

[12] Tredgold, A. F., *Mental Deficiency*, p. 452. [134]

[13] Wallin, p. 182. [65] *op. cit.*

TABLE XI

Data Essential to the Diagnosis of Mental Subnormality as Indicated by the Literature and Interviews

Type of Data	65:75	35	29:79	64:320	15:54	25:227	134:425	124:18	81:48	97:22	77:35	33	114:70	103	57:38	95:8	36:5	Coxe[1]	Kugler[2]	Baltimore[3]	Total
Psychological examination		x			x					x		x									4
Intelligence tests	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	19
Chronological and mental age	x		x			x			x											x	5
Sensory examination													x								1
Personality conflicts		x												x							2
Behavior			x	x										x							3
Moral reactions					x																1
Obsessions or fears		x																			1
Special disabilities		x																			1
Medical examination and record	x	x	x	x		x	x			x	x	x				x	x	x	x		13
Physical age	x[4]							x	x												3
Physical development	x							x	x				x	x							5
Physical history	x				x	x															3
School record or history	x	x	x		x	x			x	x	x				x			x	x		11
Teacher rating										x								x			2
Rank in class									x												1
Practical knowledge					x																1
Heredity and family history	x[5]	x		x[6]	x	x	x[7]					x	x					x	x		10
Economic condition				x	x													x			3
Home conditions		x	x		x			x										x			5
Special discipline								x													1
Environmental conditions	x[8]						x					x			x	x					6
Neighborhood conditions			x																		1
Associates			x																		1
Amusements			x																		1
Bad mental and educational hygiene	x																				1
Social characteristics and history					x			x	x		x										4
Character defects or traits		x	x																		2
Personal history from infancy						x	x												x		3
Personal habits								x						x		x					3
Sex habits								x													1
Psychiatric examination																				x	1
Neurological examination													x								1
Emotional problems				x																	1
Reaction to ordinary situations															x						1
Delinquent tendencies				x				x													2
Psychopathic tendencies		x						x													2
Temperament			x																		1
Vocational record			x																		1

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[1] Dr. Warren W. Coxe, Ph.D., Director, Educational Bureau, State Department of Education, Albany N. Y. (Data from interview)

[2] Miss Edna Kugler, Assistant Director, Special Education, Department of Public Instruction, Harrisburg, Pa. (Data from interview)

[3] Data from Visitation.

[4] Height, weight, dentition, onset of pubescence, change of voice, and the menopause.

[5] Neuropathic traits: insanity, feeble-mindedness, epilepsy, neurotic constitution and mental eccentricity; of secondary importance, alcoholism, infections, toxemia, vitiated blood supply, food and vitamin deficiency, syphilis, criminality and immorality.

[6] Alcoholism, syphilis, deaf-mutism, insanity, and epilepsy.

[7] General and physical condition, age at death and cause of death of every member of family; presence or absence of neuropathic diathesis.

[8] Includes vitiated air, deficient or insufficient food, use of narcotics, poverty, neglect, abuse, the exclusive use of a foreign language and bad moral conditions in the home; bad neighborhood conditions, physically, socially, morally and educationally considered; and excessive temperature, deficient humidity, incompetent instruction, excessive psychic and poor mental hygiene in the schoolroom and frequent transfer.

nell as saying ". . . difficult differential diagnosis seems entirely impracticable in school work, certainly for a long time to come."[14] In an interview, he also informed the writer that the Intelligence Quotient is the most reliable of all single measures. Hodgkinson [15:208], Goddard [59:272], Tredgold [134:426], and Pintner [75:180] hold essentially the same viewpoint with respect to mental examinations. Ellis [58:321], Davis [96:8], and House [61:98] would place emotional make-up as equally important with intelligence. Doll states that the diagnosis of the moron on the basis of intelligence alone is almost impossible [98] and holds with Edna Kugler that the I. Q. and M. A. should not be applied to individual cases except as an indication of possible level of mentality.[15]

Raymond holds that the mentally subnormal should be diagnosed on the basis of their capability of training at various mental levels. [125] Wallin points out that a child's industrial ability shows a closer correlation with his performance level, as measured by motor tests, than with verbal intelligence age, although there is no adequate technique for measuring socio-industrial age. [65:50, 52] Freeman [69:301] and Wentworth, [78:47] while conceding the value of intelligence tests in diagnosis, emphasize the fact that they must be interpreted in the light of all the facts that can be obtained about the pupil.

The mental examination, therefore, is probably the most important of any single measure of mental subnormality but should always be safeguarded by additional facts and used as a basis for teacher judgment. Broady says that the child should be kept in the regular class for observation if teacher judgment does not confirm the test findings. [6:30] Dickson [68] and Terman [77:78], hold that measurement should form the basis for teachers' opinion; it should neither supplant it nor supplement it. Mort says, "Used as a substitute for good judgment, the intelligence test as we have it is a dangerous tool. Used as an aid to right judgment, it is very helpful indeed."[16] Coxe, however, holds that the psychological examination is best because those who need examination most are likely to be missed when selected by teacher judgment.[17]

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[14] Coxe. (See reference to interview, p. 52.)

[15] Kugler, Edna, Assistant Director of Special Education, State Department of Public Instruction, Harrisburg, Pa.

[16] Mort, Paul R., *The Individual Pupil in the Management of Class and School.* [24]

In addition to intelligence tests and teacher judgment, other factors which are held to be important are educational diagnosis, a study of heredity, and the family history, and a complete medical examination. Bronner [57:221] and Doll [40] hold that school history is the best indication of mental subnormality. It has been estimated that from 75 to 90 per cent of mental subnormality is hereditary. [58:338] [114:240] [111:3] [320] Wallin says that abnormal mental states are what they are because of their antecedents and cannot be adequately understood or interpreted apart from their evolution or development. [65:74] It seems highly important, therefore, that a family history be obtained as an essential part of the diagnosis.

Hodgkinson holds that the problem of the intellectually subnormal child in the school system is not a medical problem, their medical needs being in every respect similar to any large group of normal children. [15:301] Wentworth shows, however, that there is a definite relationship between mental and anatomical growth and recommends the absolute necessity for a complete examination of every problem child before diagnosis is made. [78:23] It would seem but logical that a boy or girl, burdened with remediable defects, cannot make the fullest use of his capacities for educational achievement, and the surest way of discovering these defects is the complete physical examination.

A great deal of caution must be observed in order that boys and girls with normal intelligence may not be judged mentally subnormal because of factors which do not readily appear in examinations. A child is frequently judged stupid or mentally defective because of a hearing defect. [236] Defective educability due to evolutionary failure and innate peculiarities, congenital word-blindness and word-deafness, mental retardation due to malnutrition and disease, including certain special diseases of the nervous system, may lead to inaccurate diagnosis. [134:455] Nervous instability may be found in combination with any degree of Intelligence Quotient apparently from dullest to brightest. [60:70] The relation between brain size and intelligence is very slight [58:31] and a diagnosis of mental deficiency cannot be made on the basis of stigmata. Mental deficiency is not indicated by a slowness to respond. [62:123] Tredgold states that a method of very practical value is to engage the child in conversation regarding the incidents and surroundings of his daily life. [134:427] It may be that introspection and psycho-analysis should play a larger part in the diagnosis of mental subnormality.

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[17] Coxe. (See reference to interview, p. 52.)

The factors which have played an important part in the diagnosis of mental subnormality certainly should be valuable in the modification of instruction to meet the needs revealed. One of the most important duties of the diagnostician, therefore, is the recommendation of remedial measures based on the results of the diagnosis. Equally important is the making available of all the factors in the diagnosis to the teacher who will have the child under her jurisdiction.

Who should make the diagnosis? That depends on the size of the system and the administrative staff provided. In large cities, the psychological clinic may be utilized; in smaller cities, the psychologist, school physician and special class teacher may make the diagnosis; in villages, the examiner, the superintendent or principal and the special class teacher may make the diagnosis; and in rural communities either the teacher may make the diagnosis on definite instructions from the State Department or a State Clinic may be utilized. While it is recognized that professional psychologists are desirable, no pupil should suffer a lack of educational opportunity at his own level because there are none available or because provision for them is not feasible. Errors in assignment due to faulty diagnosis can easily be remedied as soon as a pupil shows capabilities beyond those required for adjustment to his environment, but the retention of any boy or girl in a situation that is beyond his or her capacities in the regular grades does irreparable damage.

Assignment. As indicated above, medical or physical treatment should be afforded the subnormal boy or girl who is in any way physically handicapped. While it will not remedy all mental and educational disabilities, it will enable the boy or girl to compete on equal terms with others of like ability. [33]

The next step is to formulate a policy for exclusion because of extreme mental defectiveness or mental defectiveness associated with undesirable character traits. Bond, [5] Hanna, [111] and Pressey and Pressey [64:226] advise the exclusion of all feeble-minded children, including morons,[18] from the public day schools and their assignment to institutions. When we consider, however, that present institutional facilities would care for but one-tenth of this number and that all public day schools are accepting boys and girls below this level, the suggestion has not a practicable basis.

Berry, [4] Coxe, [95:10] Doll, [99] Fernald, [103] Kugler and Porteus [124:229] hold essentially the same view as the author, i.e. that boys and girls with a Mental Age below five or an Intelligence Quotient of 50 or less should be excluded from the public day schools. This was the practice found in most of the school systems visited although exceptions were invariably made and will continue to be made until such a time as the state provides adequate institutional care or until local supervision is provided. Berry [87] and Averill [86] suggest that those whose intelligence level is less than eight years at leaving be trained in simple habits by a matron and not a teacher. Leta Hollingworth [114:50] and Irwin and Marks [17:133] hold that the feeble-minded child is a proper subject for educational treatment. Hodgkinson [15:410] and Robinson [126:368] sound a warning against the admission of even one low-grade case to the school because of the stigma such a case would lend to the other pupils and the reputation it would attach to the school. The morale of the class demands the exclusion of the feeble-minded. Wallin urges that the young low-grade defective be given an adequate probationary trial before being excluded. [65:178] Pintner says that the sociological factors must always be considered before recommendations are made for commitment to an institution. [75:180]

The policy of exclusion adopted will undoubtedly be determined by the local situation. The special class must be protected in its right to existence and it is justifiable to bar those who might cause trouble, either from a community or school viewpoint. Woolley advocates the segregation of the delinquent feeble-minded child in institutions. [140:264] Burt says of defective youths who appear over-sexed, and defective girls who reveal a physical basis for strong and early sexual impulses, "There is but one safe measure: they should be isolated from all risks until habit of control has been established or control fully emerged. This means either unfailing supervision or transference to some residential place of safety."[19] Broady recommends the assignment of the mentally subnormal with visual defects to the sight-saving classes. The desirability of this practice will be discussed under visual defectives.

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[18] For an explanation of terms used to designate degrees of feeble-mindedness, the reader is referred to Chapter II, pp. 13-14.

The special class should not be the dumping ground for all atypical pupils in a building. [86:124] There are two main criteria for assignment to special classes, mentality and age. Wallin holds that it is undesirable to assign children to classes for mental defectives who are not feeble-minded. [34] [65:178] While the author concurs with the general principle stated, he would not sacrifice the organization of a special class because of the necessity of admission of a few backward children. [24: 309] Woolley suggests the assignment of children with I. Q.'s of 50 to 60 to a class with an ordinary teacher, and those with I. Q.'s of 60 to 75 to another class with a special teacher. [140: 261] Berry would assign all those with I. Q.'s of 50 to 70 to one general class. [4] The rest of the mentally subnormal boys and girls who need special class attention would be assigned to classes for backward children according to the classification made on page 14. The boys and girls of normal intelligence who are backward, would be assigned to temporary adjustment rooms or coaching teachers. [24:308] Mort recommends the assignment of boys and girls who have attained the age of 13 years to the junior high school, regardless of their academic attainments, provided programs are arranged for them that they can profitably carry in junior high school. [24:32] Hodgkinson urges that all high-grade subnormal children be placed in special pre-vocational schools by the time they are 12 years of age or earlier. [15:380] The Vocational Education Act of 1921 in Ontario was amended to permit auxiliary class (subnormal) pupils of 13 years or over to be admitted to special industrial classes. [7:8] Coxe suggests that no mental defective be kept in a special class after 14 years of age and that all boys go to a pre-vocational school or into apprenticeship at 14 years of age.[20] Unzicker placed all the children up to 14 years of age in "lower exceptional rooms" and all children 14 years of age or above in "upper exceptional rooms." [136] Morgan suggests that a pupil be placed where he derives the most satisfaction. [62:540]

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[19] Burt, Cyril, *The Young Delinquent,* p. 307. [309]

[20] Coxe. (See reference to interview, p. 52.)

The upper limit of intelligence above which no boy or girl should be assigned to a special class is entirely an individual matter and must be determined in the light of all factors available. Teacher judgment is probably more important in this than any other single factor, as it indicates whether or not the boy can do regular grade work satisfactorily. It should be based largely on achievement tests if the boy or girl has attained the third grade or above.

All of the school systems visited provided classes for mental defectives but only two of them made a distinction between adolescents and pre-adolescents (B, G). Five school systems maintained pre-vocational schools for backward pupils which were called "pre-vocational," "developmental" and "boys' and girls' industrial" schools (B, C, G, F, H). Two systems had "ungraded" classes for mental defectives who were delinquents. One system maintained a "border-line" class. Six systems maintained classes for backward children with the aim of restoring them to regular grade rather than of giving a differentiated curriculum (A, D, E, G, L, P). They were called "opportunity," "restoration" and "ungraded" classes. Two systems had "pre-primary" classes for boys and girls who could not get along in the first grade, with the object of preparing them either for the regular second grade or for classes for mental defectives (D, L). One system had classes for overage pupils who were of indeterminate age or who had come into the system greatly retarded. While the terminology used to indicate the classes is not of vital importance, there arises a great deal of confusion when different types of classes are given the same name in different cities, as for instance, in three of the cities visited "ungraded" classes had connotations of discipline, mental defectiveness, and backwardness. The author suggests the following division of subnormal classes in cities large enough to maintain them:

Pre-primary: Observation class for entrants.

Special A: for mentally deficient boys and girls under 13 years of age.

Special B: for mentally deficient boys and girls over 13 years of age if they cannot be properly programmed in the junior high school.

Special C: classes for definitely backward boys and girls under 13 years of age who need a differentiated curriculum.

Special D: classes for border-line or normal backward boys and girls who may be brought up to grade.

Special E: classes for mentally defective disciplinary cases.

There is no uniformity as to the agencies responsible for assignment in the cities visited. In the larger cities, the psychological clinic or the director of special education made the assignments, while in the smaller systems the assignments were variously made by the principal of the school where the classes were housed, by the grade supervisor, by the school physician and by the superintendent. If a thorough diagnosis is made, the agency making the diagnosis would certainly be best qualified to make the assignment although this must be done through proper administrative channels in order that facilities may be available for the proper execution of the assignment.

EPILEPTICS

The same procedure in selection and diagnosis applied to mental subnormals holds for epileptics except that in the diagnosis special medical examination by experts should be available. In spite of the fact that many of the school systems large enough to have epileptics exclude them from all classes and in spite of the suggestion of writers that they be excluded, [6:59] [120] [305:383] the author reiterates what was said in Chapter II; namely, that there is positive medical support of the thesis that epileptic seizures can be controlled by a ketogenic diet. A proper increase in fats and a decrease in carbohydrates prescribed by a competent physician will reduce and in most cases prevent convulsions.[21]

Buffalo has tried this diet with a special class of epileptics for the past year and has greatly reduced seizures thereby, although mental deterioration seems to continue. Further experiments similar to those being conducted in Buffalo should be conducted elsewhere so that the epileptic boy or girl may be given an opportunity to take full advantage of the educational facilities which are entirely suitable to his or her level of mentality.

[21] 1. Harnes, Alvin, M.D., New York City. (Interview)
2. Barboka, Clifford J., M.D. *Ketogenic Diets.* Mayo Clinic, September 12, 1928.

THE MENTALLY SUPERNORMAL

The discussion of the selection of mentally subnormal boys and girls by group tests and their mental examination by individual tests, in a preceding section, applies equally well to mentally supernormal boys and girls. [161:199] There is an inadequate attempt in some of the cities visited to provide for this type of boy or girl by grouping (A, B, C, F, G, L, N). Only one system has extended special class facilities to an appreciable number of mentally supernormal boys and girls. One school system has a very thorough system of acceleration which extends through the junior and senior high school and in some cases into the upper grades (E). Several systems conduct experimental classes which have yielded valuable results from the standpoint of new methods of instruction and revision of the curriculum, but have not benefited an appreciable number of boys and girls who would profit by instruction commensurate with their level of ability (A, B, E, G). Only one system (D), makes use of individual psychological tests, the rest basing both the selection and the assignment on teacher judgment, academic proficiency and physical development. One of the school systems gave as its reason for not establishing more classes, the opposition of principals to losing their good pupils because of the mediocre showing they would make on promotions and achievement averages for their school.

Goddard strikes the keynote in the provision for mentally atypical boys and girls in special classes when he says: "We picked out the defectives because they were most troublesome. Some schools are now picking out the gifted because they are most useful." [22]

Catherine Cox expresses a similar idea in saying, "The child is father of the man; the gifted youth will be the leader of the future." [23] In the same work she states that ". . . all equally intelligent children do not as adults achieve equal eminence." [24] Pintner states that superior intelligence, as measured by intelligence tests, does not imply the possession of any desirable or undesirable social traits or of any specific ability to compete with decided success in the world at large. [75:197]

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[22] Goddard, Henry Herbert, *School Training of Gifted Children*, p. 39. [148]

[23] Cox, Catherine M., *The Early Mental Traits of 300 Geniuses*, Genetic Studies of Genius, p. 219, Vol. II. Stanford University Press, 1926. [145] [24] *Ibid.*, p. 218.

Just as the mentally subnormal require special class instruction because of their inability to profit by regular class instruction, so the mentally supernormal require special class instruction because they are unable to utilize the full extent of their abilities. Terman showed that the average gifted child had mastered the subject matter of instruction to a point 40 per cent above his chronological age, although he was held back to a grade location only 14 per cent beyond the norm for his chronological age. [160:306] Genevieve Coy, in an investigation of achievements of a special class of gifted children, showed that the educational achievement of the special class was two years greater than the control class. [146:47]

There are three general classes of mentally supernormal boys and girls who are able to do work beyond that required in the regular grades; those above average with Intelligence Quotients from 110 to 125; those who are distinctly superior, with Intelligence Quotients from 125 to 140 or 145; and those who are truly "gifted," "talented" or "precocious" with Intelligence Quotients above 145. The first group is probably being taken care of with increasing efficiency through homogeneous grouping and enrichment of curriculum. The last group constitute such a small percentage of the total school population that they are not a significant problem except from the standpoint of individual instruction.[25] It is with the second group who are now being very inadequately cared for in most instances, that this section is primarily concerned as a special class problem.

Selection. Leta Hollingworth has stated that those who fall into the best 5 per cent on a good group test will include nearly all the children who belong in the best 1 per cent because of intellectual superiority. [150:50] Whipple would select the top 10 per cent of the general school population in the grades that are to be represented, for enrollment in a general room for gifted children. [161:118][26] Henry would limit the enrollment to those with an I. Q. of 115 or above. [149:113] Bixby [144] and Goddard [148:70] selected, as did the Detroit system, children with an I. Q. of 120 who were able to meet standards of physical and social development. [11:76] Broady suggests a minimum I. Q. of 120 to 130 as essential to special class entrance. [6:108] Until such a time as the principle of special class instruction for mentally superior children has been generally accepted, it would seem that an I. Q. of 125 as a minimum would select all children who, upon further diagnosis, might profit by such instruction.

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[25] For a very detailed and thorough discussion of an investigation concerning this type of boy or girl, the reader is referred to: Leta S. Hollingworth and M. V. Cobb, "Children Clustering at 165 I. Q. and Children Clustering at 146 I. Q. Compared for Three Years in Achievement," *Twenty-seventh Yearbook*, pp. 3-33, National Society for the Study of Education. [151]

[26] For a description of the tests used in selecting gifted children and the criteria for evaluating them, the reader is referred to: Guy M. Whipple, *Classes for Gifted Children*, pp. 88 ff. [161]

Diagnosis. Table XII shows the data which authorities and school systems visited considered essential to the diagnosis of superior pupils for special class instruction. Intelligence tests and teacher judgment rank highest with health and school progress playing an important part. Whipple advocates that mental tests should be used to select gifted children rather than teachers' estimates of the pupils' ability or school administrators' inferences from school marks. [161:118] As shown in Table

TABLE XII

DATA ESSENTIAL TO THE DIAGNOSIS OF MENTAL SUPERNORMALITY AS INDICATED BY THE LITERATURE AND AS FOUND IN VISITATION OF FIVE CITIES

Type of Data	Total	*148:71*	*151a*	*144a*	*143*	*144*	*156*	*154*	*86*	*154a*	*161:93*	*149:13*	Baltimore	Detroit, Cleveland	Philadelphia, Rochester
Intelligence tests	12	x	x	x	x	x	x	x	x		x	x		x	
Teacher judgment	10	x	x	x	x		x	x	x	x			x		x
Health	6	x	x			x				x		x	x		
School record	5			x			x	x		x			x		
Educational tests	5			x	x		x	x	x						
Social status or age	4			x	x	x				x					
Physiological age	2			x	x										
Psychopathic observation	2	x	x												
Estimate of principal	1						x								
Home conditions	1	x													
Conduct	1	x													
Indications of superior intelligence	1										x				
Special talents	1					x									
Index of brigntness	1			x											
Psycho-pedagogical board	1													x	

X, however, the consensus of opinion and practice is in favor of teacher judgment and intelligence tests. Mental tests and teachers' judgment, supplemented by such factors as character traits, school record, achievement tests, health and maturity and family history, will continue to be the deciding factors in assigning boys and girls of superior intelligence to special classes.

Badanes suggests a psycho-pedagogical record to record those attributes not measurable by psychological tests. [142] Baldwin sets up a very detailed scale for selecting gifted children. [143: 39] Leta Hollingworth indicates a number of symptoms of unusual ability, among them being the fact that the gifted child is usually the youngest in the class. [150:52] Laird gives us the characteristics of superior children: (1) high general intelligence; (2) fertility of mental association; (3) comprehension of environment, and (4) mental "stick-to-it-iveness" and exceptional zeal for accomplisment. [155] According to Terman, the order of traits of gifted children, ranked according to degree of superiority, is: (1) intellectual, (2) volitional, (3) emotional, (4) moral, (5) physical, (6) social traits. The control group rated higher than the gifted group only in mechanical ingenuity. [160:555] Ellis [58:313], Freeman [147], and Wallin [65:69] indicate the physical superiority of superior children. In selecting superior children for special classes, therefore, one should distinguish between children who are both mentally and physically superior and those who are only mentally superior. [157]

Lee made an investigation of the grade at which special ability was located, showing that there is a growing tendency to discover special and general ability in the lower grades. He found in an investigation of 45 cities that ability levels were measured in all grades from the kindergarten to the tenth grade with the median grade at the fifth grade. [156] Bixby recommends that special classes be formed as early as the kindergarten. [144] Averill holds that the identification of superior children should be made well before the junior high school grades. [86: 161] Leta Hollingworth holds that it would no doubt prove impossible to conduct a class for gifted children under a minimum of eight years because of the transportation problem involved. This is especially true in the East where the private school is taking care of children above 125 I. Q. to an extent not generally realized. Because of this selective agency, it will prove difficult in some communities to organize classes for very young gifted children. Where it is administratively feasible, there is no reason why special classes for superior boys and girls should not be organized by the end of the first grade or when such children have attained the age of seven years. A challenge to their abilities at the very onset of their educational career would certainly eliminate many of the habits of laziness, inattention, conduct, and application to study that sometimes characterize superior children in the regular grades.

Assignment. There are many reasons why it is desirable to assign superior children to special classes for their work. Dortha Jensen found that special classes were the best means of providing for gifted children and that the final solution would probably be ability grouping much less restricted than the present "X" sections. [152] [153] Goddard [148:26] and Lee [156] found that these children did not become egotistical, snobbish or undemocratic when placed in special classes. Goddard also stated that the work of the teacher is made easier and those who are left benefit by the separation; in fact, that it is more desirable to segregate the gifted than the defectives. [148:35] With the latter conclusion, however, Broady found some disagreement. [6:107] Lee found that segregation is approved by most cities. [156] Freeman concluded that, although segregation does not have an effect on achievement at all comparable with the effect of differences in intelligence in the studies on which this statement was based, no modification of the curriculum was made. This, therefore, might be the chief value of segregation. [147] Leta Hollingworth brings out the fact that while a five-year-old among eight-year-olds is very conspicuous, a fifteen-year-old among eighteen-year-olds is not. As superior children continue to be accelerated in grade, they would always be the youngest in the group in the regular grade and would be correspondingly conspicuous but less so as they become older. [150:298] She also brings out the point that attempts to interest extremely young superior children in forms of play ordinarily attractive during childhood are futile. [150:147] To place a superior child in a regular class, then, is to set him apart. She also definitely refutes the theory that bright children have a stimulating effect on less able children in the same class.

[150:303] A further advantage is gained in that segregation eliminates the problem of discipline in the regular class. [149]

Mentally supernormal boys and girls with an I. Q. of 125 or more and with other factors favorable should be assigned to special classes upon the approval of teachers who have worked with them. These classes may be designated similarly to classes for subnormals, i.e., special "F," in order that undue emphasis may not be given to the superiority of the children in them.

SUMMARY

The Mentally Subnormal

1. The most satisfactory method of selecting and diagnosing atypical children is by means of a psychological clinic.
2. Two classes of mentally subnormal children need special class facilities, the mentally defective and the mentally backward.
3. The validity of teacher judgment as a basis for the initial selection of subnormal boys and girls is dependent upon the teacher's knowledge of factors which make for this condition.
4. Group tests are an economical and accurate method of discovering the mentally subnormal.
5. Boys and girls with I. Q.'s of 85 or below, those indicated as subnormal by teachers, those who show marked irregularity in the group test, and those who are retarded in school progress, may well be selected for further diagnosis.
6. Individual intelligence tests should be given to all boys and girls discovered by the initial selective process.
7. Classroom or special class teachers, with some special training, can adequately administer individual intelligence tests but wherever possible these tests should be given by a trained psychometric examiner.
8. Verbal tests should be supplemented by motor tests for the linguistically handicapped, and by tests of special abilities for all those whose record indicates the desirability of such tests.
9. The criterion of three or more years of mental retardation as a requisite for admission to special classes, is unsatisfactory from the standpoint of delay in selection.
10. Selection should be made as early as possible, preferably after a year of observation in the first grade.
11. Writers on the subject of mental subnormality indicate

that individual intelligence tests, school record and history, medical examination and record, and heredity and family history are the most important factors in diagnosis; but there is a great variation in the terminology used to indicate the factors that make up these records.

12. In diagnosis, the intelligence tests must be evaluated in terms of all the data that can be gathered about the individual.

13. Teacher judgment formulated on the basis of intelligence tests and school record is probably the most important factor in diagnosis.

14. Boys and girls with normal intelligence may appear to be mentally retarded because of hearing defects, congenital word blindness or deafness, malnutrition and disease, nervous disorders, evolutionary failure and slowness of response.

15. The diagnostician should recommend remedial measures based on the results of the diagnosis.

16. All factors considered in the diagnosis should be available to the teacher of the special class.

17. Although diagnosis should be made by a psychologist, no child should be denied the opportunity of admission to a special class because of lack of such service.

18. Before assignment to a special class, all remediable physical defects should be removed.

19. As a general policy, boys and girls with definite stigmata or with an Intelligence Quotient below 50 or a mental age of 5 years or less should be excluded, but each community must formulate principles for exclusion in the light of the local situation and provisions that are elsewhere available.

20. As a general rule, backward children should not be assigned to classes for mental defectives, but in situations where numbers are limited such assignment is preferable to leaving defective boys and girls in regular classes.

21. Preadolescents and adolescents should be assigned to different classes in order that differentiated training may be provided.

22. There is very little uniformity of terminology used to indicate the same type of classes in the cities visited.

23. The author recommends that special classes be designated by letters or figures rather than by names.

24. The agency responsible for diagnosis should have a part in the assignment of subnormal boys and girls.

Epileptics

1. Special emphasis should be placed on the medical examination in the diagnosis of epilepsy.
2. The majority of the school systems visited excluded epileptics from school classes.
3. There is medical authority for the statement that epileptic seizures can be controlled and in most cases prevented.
4. On the basis of this statement, there is no reason for the exclusion of epileptics from school.

The Mentally Supernormal

1. Very few of the cities visited provided special class facilities for boys and girls with superior intelligence.
2. The same procedure used in selecting mentally subnormal children by intelligence tests is applicable to the mentally supernormal.
3. The special education of boys and girls with superior mentality is especially important from the standpoint of future leadership.
4. Three classes of supernormal children require treatment different from that given regular grade children: namely, those above average with an I. Q. of 110 to 125; those who are superior, with I. Q.'s between 125 and 140 or 145; and the rare cases which are especially gifted, with I. Q.'s above 145.
5. Intelligence, teacher judgment, health and maturity, social and character traits, school record and family history are deciding factors in the diagnosis of mental superiority.
6. Intelligence is given as the most important factor in diagnosis, both by writers and in the school systems visited.
7. Because of the slow advance of special provisions for the mentally supernormal, only the boys and girls with I. Q.'s of 125 or more are recommended for special class facilities at present.
8. Boys and girls should be selected for special classes as early as the second grade.
9. There are very few undesirable concomitants in assigning boys and girls with supernormal intelligence to special classes.

10. Physical development and social maturity should always be considered in assigning these children to special classes.

11. Classes for mentally supernormal children should not be designated by a distinctive name but should be lettered or numbered similarly to classes for the mentally subnormal.

CHAPTER V

SELECTION, DIAGNOSIS AND ASSIGNMENT

THE PHYSICALLY ATYPICAL

That 75 per cent of the school population have some physical defect and that 46 per cent of the school population are handicapped to the extent that they cannot utilize their full capabilities for education [1] is a challenge to American public education which cannot be ignored, if every boy and girl is to have equality of opportunity to receive an education commensurate with his ability. The importance of better buildings, better methods of instruction, better curricula and better teachers is minimized if boys and girls are not physically able to take advantage of them. The Director of Physical Education and Hygiene at Baltimore, in a Bulletin issued November 1, 1928, said: "The health examination bears about the same relationship to the modern physical education program that the inventory does to business. . . . The examination effects a valuable economy in health work of the schools and surprisingly large dividends in education." [2]

Eells, Moeller, and Swain place the whole burden of effective physical education and health development in the rural schools on thorough medical inspection. [41:288] Irwin and Marks showed the value of a thorough examination at the very beginning of school life by an investigation in which 27 per cent of the six-year-old children were found to need immediate attention to their eyes. [17:284] Gesell used the kindergarten and the first grade as a vestibule school for discovering and recording the child's strength and weakness. [13:11] Mallory [21] and Moore and Hamblen [23] showed a positive correlation between physical defects and achievement.

Unfortunately, the tendency is for physical examinations in school to be routine and cursory. The American Child Health Association, in a health survey of 86 cities, questioned the value of the annual physical examination in the light of the fact that the average time spent by a physician on each child in 62 cities for which records are available is less than 3½ minutes. Of 65 cities which give medical examinations, the child's clothing is removed to the waist routinely in only nine and occasionally in six. In 24 cities clothing is not even loosened at the neck. In 14 cities the survey staff was informed that public opinion has expressed itself definitely against the disturbance of clothing during inspection.[3]

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[1] Table II, page 31.

[2] The Division of Physical Education and Hygiene, Baltimore, Md., Bulletin, p. 7.

The same inadequacy of examination was found in a rural school survey of New York where examinations were made with clothes on, and eyes were examined without charts. The valid examinations of the survey staff detected three to four times as many defects in some cases than the school medical inspection had shown. The conclusion was that physical examinations made in rural schools in New York were, on the whole, inadequate. In addition to this, the survey staff found that most communities were not in sympathy with physical examinations and had a decidedly antagonistic attitude toward medical inspection. [46:247] [176]

It is a truism to say that physical defects cannot be remedied unless they are discovered, and the importance of the physical examination in the discovery of defects cannot be overemphasized. A thorough physical examination is the first requisite in a program for physically atypical children.

Increasing recognition is being given to the part that the teacher plays in the discovery of physical defects. New York City has made it a matter of routine that every teacher shall be trained to recognize such matters as eye defects, adenoids, faulty hearing, carious teeth, and malnutrition. [17:282] The American Child Health Association found that in forty-five cities the physical records are kept in the hands of the teachers and they urge that the teacher take a responsible part in the physical examination. In only three cities does the teacher alone assist the physician and in 12 others the teacher and nurse assist him.[4] They report that the present practice of inspection of school children by the teacher for the detection of early symptoms of disease is inefficient.[5]

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[3] American Child Health Association, pp. 174-78. [278]

[4] *Ibid.*, p. 155.

Dr. Rowell says, "It is amazing what the teacher can do in detecting defects," and again, "In a regular college course, I can teach a man to *use* a stethoscope in a comparatively short time."[6] He makes the qualification, however, that the teacher cannot diagnose but can only detect for further examination.

One of the reasons why physical examinations are not more successful is that adequate room facilities are not usually supplied in elementary school buildings. Rowell suggests that inexpensive portable units, consisting of two compartments, one for a dressing room and the other for an examination room, may be constructed out of pipes and canvas, to facilitate examination procedure.

Broune holds that the teacher can be taught in a one-year course to detect the symptoms of such commonly occurring defects as malnutrition, enlarged and diseased tonsils and adenoids, decaying teeth, chorea, goitre, incipient tuberculosis, defective vision and hearing, trachoma, orthopedic defects, and of common communicable defects; but that the teacher should first have her own defects corrected. [39]

It is obvious that the teacher will play an increasingly important part in the discovery of defects in boys and girls, especially in rural sections where physicians are not available and medical attention is not common.

In Baltimore, eye, ear, lung, heart and orthopedic defects are diagnosed by clinics composed of expert diagnosticians of the City Board of Health, upon whose recommendation admission to special clinics is dependent.[7] Boston emphasizes the importance of the presence of parents at the examination in order that a complete history may be secured, and in order that the parent may be impressed with the importance of correction of defects. A complete physical examination should include eyes —external diseases, defective vision and squint; ears—aural discharge and symptoms of deafness; defective nasal breathing—adenoids; abnormal tonsils; anemic appearance; enlarged glands;

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[5] *Ibid.*, p. xiv.

[6] Rowell, Hugh G., M.D., Assistant Professor of Health Education and Assistant Physician, Teachers College, Columbia University. (Interview)

[7] See pages 51-53 for a discussion of the place of the clinic in selection and diagnosis.

skin-communicable diseases; orthopedic defects—only postural defects are likely to appear in a general examination; malnutrition; tuberculosis; cardiac examination—rheumatic heart disease, congenital heart deformities and defective functioning of heart innervation; and thyroid.[8] [281]

All health statistics go to show that carious teeth, hypertrophied tonsils, adenoids, eye defects, and malnutrition are the most frequent deterrents to normal physical development. [17:92] If we consider physical deterrents to educational development, we must add to this list hearing defects, speech defects, orthopedic defects, heart defects, and nervous disorders.

As the result of this survey of 86 cities, the American Child Health Association makes the following recommendations with respect to the physical examination: "(1) Every community should provide at least once in the course of the school career a thorough and complete physical examination of every school child. This examination should be educational in its character, interpreted to parent and teacher, and carefully followed up by nurses and teachers to secure maximum results. (2) The school medical service should recognize the importance of standardizing the physical examination procedure so as to make possible the comparison of findings and results."[9]

With the physical examination as the basis for educational provision for physically atypical children, the next section will be concerned with the selection, diagnosis and assignment of boys and girls suffering from specific defects.

Visual Defectives

Selection. Periodic examinations of the eyes are given to approximately 25 per cent of all children of school age. State laws are not uniform in their requirements for eye examinations. Less than one-half of the states provide for regular examination of eyes and most of these make tests for defective eyes a part of the general physical examination for other defects and disabilities. [173:9] [164:110] It is important that the eyes of all school children be examined annually or oftener, preferably by a medical examiner.[10]

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[8] For an enumeration of symptoms and treatment of all the common defects which may appear in children, the reader is referred to a table in *Health Supervision and Medical Inspection of Schools* by Thomas D. Wood and Hugh G. Rowell, pp. 274-89. [305]

[9] American Child Health Association, p. xiv. [278]

However, eye tests are not always included in routine physical examinations where they are given, and when included do not always reveal defects. Normal sight does not mean normal eyes or lack of defects. [162] Wide differences in results of tests already made show that many tests are made superficially and uniform procedure is not observed. [195] Simple visual acuity tests reveal but a small percentage of the actual number of refractive errors. [194] For this reason, examination under a mydriatic or a cycloplegic (a drug used to produce temporary paralysis of the eyeball muscles) should be made before admission. [162] [305:360]

In the absence of a general examination, and even as a periodic supplement to it, the teacher is the proper agent for the discovery of visual defectives. In some cases the nurse makes the preliminary tests, [25:238] [167] but her time is necessarily limited to such an extent that it is but another form of the general examination. The boy or girl with a visual defect acquires that defect at any time and the sooner it is discovered, the better are the chances for correction or conservation of vision. This day-by-day detection is properly the function of the teacher. She can, with very little training, be taught to test vision and detect visual defects sufficiently to warrant further consideration by the school physician or ophthalmologist.[11]

Probably the one most significant thing the teacher can do is to watch for signs of eyestrain. Strain associated with visual acuity is the deciding factor in urging further examination by an eye specialist. [191:24] The following is a list of symptoms which indicate eyestrain:

1. Red lid margins
2. Redness of the white part of the eye with blood vessels that stand out prominently
3. Excessive tear secretion in the eyes
4. Winking frequently and squeezing the eyelids shut
5. Spasm of the lids
6. Itching, smarting, aching or watering of the eyes

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[10] [162] [167] [173: 4] [181] [191: 19] [305: 360] According to the *New York Sun* of June 20, 1929, a device has been invented by Dr. F. E. Harrington, Health Commissioner, Minneapolis, Minn., for testing the vision of children in groups of 15 by the use of moving picture films and regulation letter tests.

[11] [46:252] [41] [164:34] [174] [177] [191:19] [195]

7. Inflammation of the eyes or lids
8. Swelling, puffing or drooping of lids
9. Frequent styes
10. Blepharitis and conjunctiveness when associated with all other symptoms
11. Frequent frontal headaches
12. Nervous exhaustion
13. Muscular twitching of face
14. Earaches
15. Squinting, frowning, wrinkling of forehead and face
16. Blurred or double vision, letters running into each other
17. Tired feeling on using the eyes
18. Drowsiness
19. Easily fatigued
20. Peculiar position of head
21. Irritability
22. Inattention
23. Aversion to moderate light
24. Inability to see blackboard
25. Inability to read board work or tell the time by ordinary school clock
26. Holding books nearer or farther from the head than normal
27. Miscalling words while reading and losing the place
28. Failure to keep to lines when writing
29. Omitting words when reading
30. Unexplained deficiencies in certain types of work such as reading or writing, although there are no signs of eye defects.[12]

The first essential in testing vision is a dependable vision chart. [164:96] Levy found the Snellen test card equal in efficiency of testing with the Ives visual acuity apparatus, more adaptable to all conditions and more convenient to use. [181] The Snellen test cards were recommended for use in practically all of the references on visual acuity testing. There are three general types of charts which should be available for use, the chart with letters for those who can read letters; the chart with figures for those who can read figures but not letters, and the Illiterate E Chart for those who can read neither figures nor letters, such as mental defectives above the imbecile grade and children over three and one-half years of age.[13]

The National Society for the Prevention of Blindness emphasizes the need for a preschool clinic for the examination of eyes in order to lessen the amount of testing required later on. [183]

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[12] [28: 8] [41: 296] [169] [174] [176] [184] [191: 24]

[13] For examples of the use of the Illiterate E Chart with small children, the reader is referred to a transcriptive report of a demonstration of methods in a pamphlet by Jessie R. Royer, *Testing the Vision of Preschool Children*, published by the National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City.

Royer suggests that charts be examined before they are used in order to discover any defects which might invalidate the test results, such as results drawn for 6-meter instead of 20-foot distance; distribution of letters without relation to visibility; glossy or thin texture paper; ink not sufficiently black; indistinct outline of letters; mixture of lines and letters with the illiterate E; or elaborate schemes. [192]

The first step in testing is to hang the chart in a good clear light, preferably electric, at an exact distance of 20 feet from the pupil and at a level with his head. The staff in the Jamestown Eye Survey had two portable lighted boards made at a cost of $1.50 each which were very satisfactory. [191:7] The pupil should be placed so that the strong light shall not shine directly in his face.

Each eye should then be tested separately but with both eyes open. This is accomplished by use of a card which is held over one eye but does not press against it. The pupil pronounces aloud letters or figures beginning at the top and reading from left to right. The procedure is repeated for the other eye but the order is reversed. A mistake of two letters on the 20- or 30-foot line or a mistake of one letter on the 40- or 50-foot line may be allowed. If an E Chart is used, the pupil indicates the position of the E with his fingers outstretched or with a large cut-out letter E which he holds in his hand. The results should be recorded by a fraction, the numerator of which is the distance and the denominator the lowest line read. In order to test for memorization, one letter at a time can be called by using a cardboard with a hole in it and exposing only the figure or letter desired. [169] [192] [164:72] Royer suggests a "pinhole" test to show parents the need for and the advantage of glasses. The pupil reads the chart with one eye exposed and then reads it with that eye covered with a card in which there is a pinhole. The improvement made will usually convince parents of the desirability of glasses. It is not desirable for routine examination, however, as it does not show errors of the retina. [192]

The next test is properly the work of the eye specialist. It involves the everting of the lids for inspection, testing of the pupillary reflexes to light, examination of the cornea, testing of muscle balance as to the relationship between the two eyes (cover-test), examination of the interior or fundus of the eye for pathological conditions, and detection of squint. [181] [192] The latter, if noticeable, should be reported by the teacher.

The data recorded by the examiner are used as bases for reference to an eye specialist particularly if it records that there is evidence of eyestrain. In designating the results of examining the eyes, the rating of the poorer eye is indicated. When glasses are worn, the rating of the eyesight with glasses is recorded in addition to the rating without glasses. In the Jamestown Eye Survey all children were routed for a complete examination who were: (1) 20/40 or less; (2) 20/30 or 20/15 with eyestrain; and (3) 20/10. Better than 20/20 or normal, that is, 20/15 or 20/10, indicates farsightedness or hyperopia, which, if associated with eyestrain, points to a refractive error and, if uncorrected, may lead to untoward symptoms. The findings of this Survey [191: 14-17] as well as those of the U. S. Public Health Service [162] indicate that more attention should be given to potentially hyperoptic children. Eyestrain resulting from neglecting such cases very often leads to poor scholarship on the part of the pupil as well as to nervousness. The necessity for a cycloplegic was revealed in an investigation by the U. S. Public Health Service when 66 per cent of those tested could read 20/20 before the cycloplegic and only 21 per cent could read 20/20 afterwards.

Diagnosis. After a boy or girl has been discovered to have defective vision, he or she should be referred to an oculist or an ophthalmologist for a more complete examination and the necessary corrections. [28:4] The Oregon State School for the Blind, in a pamphlet issued to parents, says: "An 'eye-doctor,' optician, or any ordinary medicine man should not be allowed to treat such a delicate organ as the eye. Only first class oculists and eye specialists should be consulted for such a delicate task as eye examination and treatment."[14] While in a smaller system it is not feasible to retain an eye specialist on the staff, arrangements could be made for the services of one in a consulting capacity. Only three of the cities visited retained an oculist on the medical staff (B, D, E).

Some of the common causes of low vision are hyperopia or farsightedness, which is most common especially in the earlier ages; myopia or nearsightedness which is usually a progressive condition affecting older children in increasing numbers; astigmatism; congenital defects of the eye; scars on the cornea; cataract or opacity of the lens; disease of the optic nerve; and trachoma. [28:4] [164:11] [174] [180] [305:271]

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[14] Oregon State School for Blind, Salem, Oregon. *Information for Parents and Friends of Blind and Partially Blind Children,* p. 14, 1927. [186]

Fortunately, trachoma has been almost completely eradicated through preventive measures although its importance is emphasized by the fact that in Greece it is the greatest single cause of blindness. [201] The detection of squint is necessary in the diagnosis of eyes due to the fact that early treatment is necessary to prevent dimness of vision. It is also necessary to watch for those who have normal vision but do not read 20/20 due to psychological factors. [281] Berkowitz found the following incidence of eye defects: *emmetropia, 13.9 per cent;* hypermetropia, 36.2 per cent; hypermetropic astigmatism, 44 per cent; myopia, 1.4 per cent; myopic astigmatism, 3.5 per cent; mixed astigmatism, 1.0 per cent. [164]

Various ophthalmological or ocular standards of admission to sight-saving classes have been adopted in different cities and by State Departments of Education. [164:76] [167:285] [168:10] [175] Hartman states, however, that it is an individual proposition because there is a difference of opinion among oculists as to the eye conditions which make children eligible for sight-saving classes. [176] Winifred Hathaway informed the author that, in a city of 50,000 population, ophthalmologists and physicians could probably furnish enough cases for a special class without any selection in the school.[15]

The guide recently adopted by the National Society for the Prevention of Blindness is probably the best to use as a basic standard.[16]

It is very important that children with color defects be identified as early as possible. While they are not special class problems unless handicapped by other defects, they do require special training to provide them with a substitute for their handicap. [65:253]

Assignment. Pechstein holds that entrance to a class for blind children before the age of seven years is no advantage from a standpoint of school success. [188] Hadley holds that most of the defects of vision can be cured if corrected before the age of seven. [175] From this point of view it would seem that entrance to a sight-saving class from the kindergarten would be a distinct advantage. As the proportion of children with myopia is four or five times as great among children 12 to 16 years of age as among children 6 to 7 years of age, it is necessary that vision be very carefully checked and conserved between the ages of 7 and 12 years. [162] [196]

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[15] Hathaway, Winifred, *School Guides for Finding Potential Sight-Saving Class Pupils,* National Society for the Prevention of Blindness. (Typewritten copy given to author.)

[16] See pages 18-19 for a full discussion of this guide.

Broady holds that mental subnormals who are visually defective must be kept in classes for the visual defectives because of the small number involved. [6:51] Hadley and Hathaway, however, definitely state that mental defectives should not be put in sight-saving classes. [175:21] It is probable that the local situation will determine the policy adopted, although, if their visual handicap be permanent, it would seem that an institution for the feeble-minded would be the best place for them because of the impossibility of their ever attaining any degree of economic independence. Pintner has indicated several tests of intelligence for the blind which could also be used for those with defective vision. [75:130]

As shown in Chapter II, the instruction of the blind and partially-sighted together is impracticable from the standpoint of methods and materials of instruction. The totally blind see through their fingers while the visual defectives see through their eyes. [180] [196]

Broady [6:47] and the State Department of Education of New York [219:5] hold that the totally blind have no place in the regular school organization. Stricker, [198:91] Wood and Rowell, [305:382] and Best, [165:309] however, disagree with this viewpoint because of the fact that pupils in institutions lose valuable social contacts, do not develop the self-reliance which is especially necessary because of their handicap, and are deprived of care and affection which can best be found in the home. They qualify this, however, by pointing out the desirability of the child's mastering the point system before going into the regular class. One city visited educates the blind and low-vision children together because of administrative necessity (F). Children who are progressively growing blind should be educated with the blind to learn Braille (a system of raised print which enables one to read with his fingers) in order that they may have a tool to use when they completely lose their vision. Children who are blind as a result of an undeveloped optic nerve may improve to the extent of being able to enter the sight-saving class.

One of the first measures to take before admitting a low-vision boy or girl to a sight-saving class is provision for glasses or medicinal treatment. [177] It is obvious that this is a sound administrative policy even though the school provides the necessary glasses or treatment, for every boy and girl who can be kept in the regular class or can be discharged from the sight-saving class at the earliest possible moment, reduces the cost of such education. Persistent refusal to wear glasses should be regarded as sufficient cause for exclusion from school, provided it is first determined that glasses are suited to the pupil's needs and the frames comfortably fitted. [184]

The assignment of blind boys and girls to an institution or to a special class and the assignment of partially sighted boys and girls to a special class or to an advantageous position in the regular class should always be one of the recommendations of an eye specialist. For the boy or girl who attains high school, special readers from among the brighter children in the same class can be retained and paid for by the school. This system has been successfully tried in several school systems.

HEARING DEFECTIVES

Twenty-one states have laws which require the annual examination of the eyes and ears of school children. In four states the examination is to be made by the superintendent or teacher, in seven by the teacher, in three by the teacher or physician, in one by a specialist, and in six as a part of the regular medical inspection.[17]

Rogers and Phillips, in an investigation of medical examination in cities of the United States, found that children were examined for hearing in 29 cities over 100,000 in population; in 76 cities out of 84, with population between 30,000 and 100,000; in 166 cities out of 206 with population between 10,000 and 30,000; and in 492 cities out of 573 between 2,500 and 10,000 population. In the larger cities most of the examinations were made by a physician, while in the smaller cities they were made by the nurse or teacher. [302]

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[17] Superintendent or teacher: Louisiana, Oregon, Virginia, Colorado; Teacher: Nebraska, North Carolina, Utah, Nevada, Wyoming, Vermont, District of Columbia; Teacher or physician: Maine, New Hampshire, Massachusetts; Specialist: New York; Part of regular medical inspection: South Carolina, South Dakota, Pennsylvania, Alabama, Rhode Island and Maryland (every two years).

Selection. Unless a thorough hearing test is given periodically to all children, school systems have to depend on the teacher for the discovery of boys and girls whose hearing loss is sufficient to prevent them from fully profiting by regular grade work. Bridie lists a number of games that can be used to detect hearing defects [90], and Descoeudres suggests that a child's hearing can be tested by tapping smartly, calling him loudly by name or getting him to recognize the sounds made by such well-known objects as a whistle, a bell, etc. [97:93] Rowell suggests the detection of deafness by giving a dictation test on a particular day to all pupils and then comparing the words miscalled or omitted.[18] In all but one of the school systems visited which had classes for the hard-of-hearing, the teacher selected the hearing defectives either alone or in connection with group tests (A, B, D, E, G, N).

Wallin states that "The determination of aural efficiency is usually made for whispered or vocalized speech, and by clicks, ticks or tones produced by various instruments such as the watch, the acoumeter (*e. g.*, A. Politzer's or A. Lehmann's), the audiometer (Seashore's, McCallie's, or the Western Electric), the telegraph snapper and tuning forks."[19]

He concludes that the forced whisper test is usually the most serviceable because it determines the ability to hear auditory stimuli which are of highest social significance—namely, spoken words. [65:240] This test, as well as the watch-tick test, is impracticable in many situations and is not always satisfactory because of the inexperience of the tester, the noise in the room which is almost impossible to eliminate, and the speed with which pupils can be tested. [213] [236] [281] It is practically impossible to standardize the results of the whisper test unless the same person does all the testing, thus making the diagnosis more inaccurate.

The Bell Telephone Laboratories have developed a phonograph to which has been added telephonic apparatus so that the sounds produced in the phonograph are transmitted to the ears of those under examination by means of head sets. It is called the "4-A Audiometer," or, more commonly, the "Phono-Audiometer." The Graybar Electric Company publishes a brochure which lists as advantages the uniformity of transmission of sounds to the ears, the faithful reproduction of conversational speech embodying a wide-pitch range, the minimizing of the effects of room noise and the elimination of reverberation from the walls of the room, the detection of pupils who are deaf in one ear only, the greater coöperation of pupils because of their familiarity with similar sets on radios, the testing of either ear separately, the testing of from one to forty persons at once, the constancy of sounds when the test is repeated, and the simplicity of operation. The 4-A Audiometer is simply a spring motor phonograph using a magnetic reproducer which picks up the vibrations originated by the record and transforms them into electrical vibrations which are transmitted to the persons under examination as sound waves, as if by telephone. No batteries or outside sources of electrical energy are required.

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[18] Rowell. (See reference to interview, p. 79.)

[19] Wallin, John E., *Clinical and Abnormal Psychology*, p. 239. [33]

That this instrument is the most efficient device for testing the hearing of large numbers or for discovering hearing defects is attested by its wide use and universal endorsement.[20]

Probably the greatest advantage of this instrument is that it can be used for a survey of all the children in the system due to the fact that 75 to 150 children can be tested per hour with one instrument.

It discovers many potential cases of deafness through the gradation of units of hearing from full hearing capacity to total deafness. It has the disadvantage of not being usable below the second half of the second grade, the children not being able to write or not having definite number concepts. [236]

For younger children and lower grades of mentally subnormal children, an individual instrument such as the Seashore Audiometer, the 3-A Audiometer or the 2-A Audiometer may be used. [236] Four of the six cities visited, which had hard-of-hearing classes, used the 4-A Audiometer and found it very satisfactory. One city found the 2-A Audiometer very successful for individual

[20] [28: 24] [205] [210] [213] [217] [218] [226: 9] [228] [236]

tests. Another city found the 3-A Audiometer very unsatisfactory for individual tests.

The author received data from Emily A. Pratt showing that 1,169 children out of 18,198 tested by the phono-audiometer, in 17 school systems in New York State were found defective. The importance of the testing of every child in the school system is shown by the fact that out of 49 children having defective hearing of the 488 children tested, 29 were found to have been retarded pedagogically one or more terms.[21]

An average for the past five years in New York State shows 1.3 per cent out of the number of pupils examined annually by the school medical inspector to have defective hearing. That this method is inadequate as far as detecting hearing defectives is concerned, is shown by the fact that 6.4 per cent of those tested by the phono-audiometer in the above survey showed hearing defects. [226]

All pupils found defective on the first test should be retested to eliminate the element of fear, failure to coöperate, slowness of comprehension and temporary deafness. [28:25] [209] [218] [226] [236] Fletcher found that only two-thirds of the children apparently hard-of-hearing at any one time would remain in this class if examined periodically. [209] Emily A. Pratt estimated that the number found to be defective is reduced 25 per cent by the retest. [226:6]

The hearing loss of a boy or girl is recorded in terms of loss of sensation units as determined by the phono-audiometer, and in terms of ability to hear a forced whisper at varying distances as determined by the whisper test. In the higher grades, a loss of six sensation units and, in the lower grades, a loss of nine sensation units in either ear, should be the basis for reference for an otological examination. [218] [236] If the whisper test is used, inability to hear a forced whisper at a distance of less than 20 feet should constitute a basis for an otological examination. [33]

Diagnosis. The primary essential of adequate diagnosis is the services of a competent otologist or ear specialist. There is definite evidence of ear trouble in those who have defective hearing except in rare cases of functional loss of hearing. [228] [22]

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[21] Pratt, Emily A., M.D., Specialist in Eyes and Ears, State Department of Education, Albany, N. Y. (Data furnished author in a letter, June 4, 1929.)

[22] See pages 19-20.

Certain data are essential for diagnosis. As shown on page 19, twenty-eight to thirty-five per cent of deafness is hereditary. For this reason, the family history is an important source of information. Excluding congenital deafness, the leading causes of deafness are meningitis, scarlet fever, measles, falls and blows, whooping cough, foreign bodies, wax, obstructions, catarrhal conditions, so-called "colds," abscesses, running ears, nerve deafness, diseased tonsils, adenoids, teeth and sinuses and diffuse lymphoid tissue, improper nose cleaning, chronic low-grade infection of the nose and throat, suppuration through eustachian tubes, history of earache or noises in the ears, and middle ear infection. [6:53] [205] [225] [227] [281] Emily Pratt found that 80 per cent of those who had defective hearing had an ear, nose or throat defect.[23]

It is, therefore, essential to get a personal history of the boy or girl from infancy as well as a thorough medical record by examination. The New York League for the Hard of Hearing found that 90 per cent of the deafened showed present or past purulent or micro-purulent condition and advocated the importance of using a stereoscopic X ray.[24]

Bastow suggests that most of the essential information outside of the medical examination can be gained by questioning the child and the mother and by records of educational progress. [281] Horn [16] and Broady [6:53] advocate an institution for all mentally deficient deaf children or those with hearing defective enough to require instruction in a special class. It is, therefore, important that the mentality of hearing defectives be determined as part of the diagnosis. The Pintner Non-Language Mental Test and the Pintner Educational and Survey Test are valid and reliable for children 12 years of age or above. [225:397] For other children, the Pintner-Patterson Performance Scale (short scale), the Porteus Scale, Koho Block Design Test, and the Porteus Mazes are satisfactory. [75:132] [235:10] Descoeudres states that ear troubles occur more frequently among the mentally defective than among normal children. [97:93] This makes it imperative that all mentally deficient deafened children be discovered and segregated in order that the normal deafened may have full opportunity to develop substitutes for hearing. There is too little hope of economic or social sufficiency for the mentally deficient deafened child to warrant public day school instruction.

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[23] (Data supplied by letter, see p. 90.)

[24] Lecture and audiometer demonstration at Teachers College, Columbia University, New York City.

In the diagnosis of hard-of-hearing children, therefore, there should be made available the results of a test of the degree of hearing, the family history, the personal history, the medical record, the mental status, and the educational record. Of these, the most important for purposes of instruction is the first. The American Federation of Organizations for the Hard of Hearing says: "In non-suppurative cases . . . the hearing test must be the main criterion for making a diagnosis as the appearance of the ear, its mobility and other diagnostic findings in many cases give no evidence of abnormalty." [25]

Assignment. The discovery of the age of onset of deafness has important implications with regard to the type of instruction which should be offered.[26]

From 55 to 80 per cent of deaf children lose their hearing before they are five years old, and consequently either have imperfect speech or, if uncorrected, lose their speech. [215] [225] [233] Consequently, the earlier that instruction is given them, the better chance they have of competing with other children of their age in the proper grade. Speech reading is a slow, laborious process and pupils usually must mark time educationally while learning it. The consensus of opinion favors entrance into a speech-reading class at an early age. Horn states that children may be admitted at the age of four in Des Moines, Milwaukee, Minneapolis, Portland, Spokane and Toledo; at the age of three in Chicago, Oakland, Los Angeles and San Francisco; and as early as two and one-half in Dallas. [16:254] Pintner recommends that the deafened begin education at an early age. [224] Hall sees no advantage in beginning school before five or six years of age, but in the light of the educational handicaps of these children, this position seems hardly tenable.

A very large percentage of the cases of partial deafness, especially of the slowly progressive type, if discovered early and given adequate treatment, are preventable and will result in the restoration of normal hearing conditions. [207] [218] The first task of the school is to provide treatment for, or require

[25] U. S. Bureau of Education, *The Hard-of-Hearing Child.* School Health Series, No. 13, July, 1927. [236]

[26] See pages 19-20.

the treatment of, all remediable cases of partial deafness in which there is any hope of betterment.

Boys and girls with defective hearing should be assigned according to degree of hearing, prognosis and possibility of learning speech. The types of provision necessary are special schools for the totally deaf, special classes for the deafened, lip-reading instruction for the hard-of-hearing and advantageous placement in the classroom with lip reading or coaching for the slightly hard-of-hearing.

All but four of the states maintain state institutions for the totally deaf. Pratt [27] and Berry [4] advocate the sending of all totally deaf children to a state institution.

Horn names four types of deafened children who should be in state institutions: (1) those whose home conditions are undesirable for their upbringing; (2) the incorrigibles and the mentally deficient; (3) country children who do not live near day schools; (4) children incapable of learning speech. [16:259] [6:53]

Most of our larger cities maintain schools for the deaf for this type of boy and girl. [220] Unfortunately, the deaf and the deafened are sometimes taught in the same school. In that case, those with residual hearing lose their speech because of the lack of opportunity of using it and because of contact with the distorted speech of the congenitally deaf. The education of the deaf and the deafened are distinct problems which require different methods for solution. [211] [226:4] [230] Hearing defectives with a hearing loss of more than 30 sensation units should have special education in a school for the deaf.

Instruction should be given in a special class to children with less than 25 per cent hearing, to children with total loss of hearing but normal speech, to children with a hearing loss of 25 sensation units, or to children with ability to hear loud conversational tones, not farther than six inches. [33] [202] [210] [219] [230] Boys and girls with greater hearing acuity than this, but in the first and second grades, should be given special class instruction until lip reading becomes a fixed habit. [232] Those whose hearing is not seriously defective now but is progressively declining should also be placed in the special class as preparation against the time they will lose their hearing completely. Hard-of-hearing children who cannot hear loud conversational tones farther than two feet or have a hearing loss of 20 to 25 sensation units need coaching. [230] Rowell says that a good test of the necessity for going into a special class is the teacher's estimate of the child's ability to get along, provided the teacher thoroughly understands the problem of the deafened.[28]

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[27] (Unpublished data furnished the author.)

Children with a hearing loss of 15 units or more after correction by an otologist, or who cannot hear ordinary conversational tones farther than six feet, require lip-reading instruction for at least a period a week. [28:28] [202] [230] Lip reading should also be given when the otological examination shows a possible progressive or chronic catarrhal condition or gives indication of nerve deafness, however slight. [6:54]

Slightly deafened children should be given advantageous placement in the classroom and should receive sympathetic tolerance from the teacher for their inability to hear normally.

Assignment should be made only on the recommendation of an otologist. In all the cities which the author visited, the hearing defectives were assigned by the principal of the school for the deaf (A, B, D, E, G). The principal of one of the schools stated that the responsibility for assignment belongs to the party which has the responsibility for the education of the children.

SPEECH DEFECTIVES

The greater number of speech defects of boys and girls develop between the ages of five and nine years. [245] [246] Clara Stoddard found that only 18 per cent of 683 pupils acquired defects after seven years of age. [251:7] Blanton and Blanton have shown that they are acquired in the first five years of life and that if training were given during this period, there would be little necessity for individual corrective work later on. [240:7]

Selection. The importance of beginning the selection of speech defectives as early as possible cannot be overemphasized. The initial selection of boys and girls with speech defects is a relatively simple matter and can be made by the teacher or principal of a school on the basis of pupils' deviation from the normal, however slight. A survey made in each school at the beginning of each term by the principal would discover all boys and girls who needed to be further examined. The classroom teacher should note defects and report them as they appear.

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[28] Rowell. (See reference to interview, p. 79.)

The diagnosis of speech defectives is best accomplished by a clinic composed of a physician, a psychologist and a speech-correction teacher. Where this is not feasible, the special teacher is qualified to make the diagnosis although it is always desirable to have it checked by a physician, especially in case of malformations and neural disorders (A, B, D, E, F, G).

The data required in the Los Angeles schools for examination of speech defectives furnish information for an adequate diagnosis. It consists of a case history—a physical examination, a psychological examination, a family history, a record of improvement and a record of school progress. [244]

Diagnosis. Most speech disturbances of childhood have a psychogenic rather than a physical origin. [65:457] The correction of speech defects is, therefore, an educational rather than a medical problem. Marked differences in the number of cases of defective phonation in different schools are probably due to the quality of the teaching in the first grade.

Speech defects are diagnosed as stuttering or stammering, phonetic defects, or the speech of mental defectives. Stuttering is the spasmodic or uncontrollable repetition of initial sounds of words (usually consonants). Stammering is the spasmodic repetition of words and syllables.[8:92] [65:464] Hollingworth [60:185] stated that stammering is evidently a complication in some cases of modified-handedness, but Wallin [254[found that the vast majority of left-handed pupils who had been taught to write with the right hand had not developed any speech defects.

Clara Stoddard classified the occasion or cause of the stammer as reported by parents and speech teachers. The parents reported the causes as nervous instability, shock, and debility in 31 per cent of the cases; as imitation, direct or mocking, or indirect, or association, in 14 per cent of the cases; and inheritance in 13 per cent of the cases. The teachers reported 12 per cent of the cases as organic stammering, 28 per cent of the cases as neurotic stammering and 2 per cent as the result of carelessness. Stoddard questions whether stammering can be directly inherited but assigns an inherited weakened speech mechanism as a factor to be reckoned with. [251:4; 8] Morgan states that 10 to 15 per cent of stuttering is caused by abnormalities of the peripheral organs and the rest as the result of functional disorders, and that invariably there is an emotional element involved. [62:297] Edward W. Scripture warns against classifying stuttering with other nervous disorders. [248:72] Blanton and Blanton state that it is rarely noticed in young children although it is often present. [240:103]

Lisping is the most common of phonetic defects. Lisping is commonly classified as negligent or functional lisping, which is due to mental carelessness; organic lisping, which is due to anatomical defects of the vocal organs; and neurotic lisping, which is characterized by quick, nervous, muscular reactions and is closely allied to stuttering. [240:119] [248:123; 162; 173; 181] The annual report of the Division of Special Education of Philadelphia for 1928 classifies lisping as lingual protrusions, that is, lisping with the tongue protruded between the front teeth, and lateral-emission lisping, that is, with the tongue protruding between the back teeth.

Other defects to be noted are lalling, which is found in children with a low degree of energy; baby talk, which rarely perseveres beyond the third or fourth grade; voice defects which are due to a condition of the larynx or some bad habit which makes the voice strained or otherwise unpleasant; acute cases of foreign accent; the speech of the cleft palate cases; letter substitution, dystalia, agrammatism, cluttering, mutism and hysterical asphasia.[29]

The diagnosis of speech defects involves a study of the individual person rather than the defect itself, ". . . for not only do the symptoms in each case differ, but the underlying causes and the individual temperament as well." [30]

Assignment. In the schools visited, only boys and girls of normal intelligence were taught in the speech classes, the mentally subnormal with speech defects being cared for in the special classes for mental subnormals. The mentally subnormal speech defective is rare, however, in that speech defects are relatively no more common amongst them than among normal children. [244] [251:4] Broady, [6:58] Camp, [243] and Wood and Rowell [305:355] recommend full-time special classes for acute cases of stammering, lalling and similar defects. This would be necessary in only a very small percentage of the cases and it is questionable whether the increased benefits of the special class over the part-time class is economically justifiable. None of the school systems visited maintained full-time special classes, but seven cities provided part-time classes, in six cases for one period a week and in one case for two periods a week. Probably the most desirable arrangement would be to have classes two or three times a week for the acute cases, once a week for the less severe cases, and classroom correction for the mild cases.

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[29] [8: 92] [65: 457] [240: 103-119] [242] [243] [247] [248: 187] [250] [254]

[30] Blanton, Margaret G., and Blanton, Smiley, *Speech Training for Children; The Hygiene of Speech*, p. 99. [240]

It is essential that physical defects be remedied, and emotional causes be removed as far as is possible, before any boy or girl is assigned to a speech correction class.

It is desirable to organize centers to which pupils from adjoining schools may be sent. One small school system solved the problem in an interesting way. A public-spirited physician donated his time for two hours one day a week for diagnosing cases and two special class teachers gave one hour a week of their time after school to the correction of speech defectives referred by the physician. The improvement made in the cases has resulted in the employment of a full-time speech teacher for the coming year (J).

ORTHOPEDIC DEFECTIVES

That public school provision for crippled children is wholly inadequate is indicated by Howett when he says: "Existing special educational facilities are caring for less than two per cent of the crippled children of the United States." [31]

Inadequate facilities in rural communities account for only a fraction of those not cared for and the inevitable conclusion must be that this phase of education of boys and girls is not thought of as properly a function of the public schools—an idea which is certainly contrary to the principles of equality of educational opportunity so universally adopted in this country.

Selection. Stevenson, in a survey of crippled children in Chicago, found that every crippled child, who was physically able to go to school and who was mentally normal, was attending school. [276:61] The problem, then, is not so much the discovery of crippled children as it is the adequate diagnosis and treatment of their disabilities. Rogers and Phillips, in a study of the extent of physical examinations in school systems of the United States, brought out the fact that an annual examination was made of crippled children in 79 per cent of the cities over 100,000 population reporting; in 50 per cent of the cities between 30,000 and 100,000 population; and in 40 per cent of the cities between 2,500 and 30,000 population. About one-half of the examinations were conducted by a physician, the rest being made by the nurse or the physician and nurse. [302]

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[31] Howett, H. H., "Who Cares for the Cripple?" *Hospital Social Service*, 16:543-47; 549; December, 1927. [265]

A survey of the community is essential to the discovery of all crippled children, especially those who are bedridden or "shut in" because of their physical incapacity. Such a survey could utilize the records and facilities of the city health department, the social and welfare agencies, and the charitable organizations in addition to those of the public schools. For most of the cases, however, the routine physical examination of all boys and girls in the school would discover most of the cases if it were complete. Other cases would be discovered by the teacher of physical education, by the school nurse, and by the classroom teacher. [305:413]

Diagnosis. Dr. Mitchell is authority for the statement that an ordinary physician is not competent to diagnose crippled children.[32] The most desirable procedure in diagnosis is to have all crippled children examined by a clinic of which a thoroughly competent orthopedic surgeon is an integral part. The value of such a clinic is two-fold: first, it locates all children for treatment, and, second, it advertises existing conditions to communities and stimulates public opinion toward the enforcement of already enacted legislation or the enaction of necessary legislation. [256:38] Rotary Clubs, Kiwanis Clubs and similar organizations have established clinics in many communities too small to have them as part of the municipal organization. The public interest thus engendered has made this phase of child care an integral part of the child welfare work, both in school and out of school. No school, however small, should fail to have their crippled children diagnosed by an orthopedic surgeon or, if one is not available, by a competent physician. In rural communities close coöperation and coördination with the county health organization is usually effective in securing examination. [270] Abt suggests that two groups should interest themselves in the problem of clinical treatment and diagnosis: a non-professional group which will provide the resources to support these facilities, and a professional group which will operate them. [256:15]

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[32] Mitchell, Harold H., M.D., Medical Director of School Health Study, American Child Health Association, 370 Seventh Avenue, New York City. (Interview)

Table XIII shows the causes of crippled conditions in children and the percentage of the total each represents. Diagnosis of the causes is very important in that instruction, physical therapy and treatment are dependent upon an accurate knowledge of the cause of the condition. Infantile paralysis, or poliomyelitis, is the greatest single cause, and, unfortunately, medical science has not as yet discovered the essential facts necessary to reduce its incidence. Surgical tuberculosis or tuberculosis of the bone is showing a decrease year by year, due to the effectiveness of preventive measures. Other important causes are congenital deformities, such as club foot and cleft palate; rachitic deformities resulting from general or local disease; traumatic conditions resulting from accident; osteomyelitis or diseases of the bone; postural defects, such as curvature of the spine; amputations and muscular distrophy. Infantile paralysis presents the most difficult problem and suspects should be isolated and existing cases quarantined. [270]

The records necessary for a diagnosis are essentially similar to those required for other physically atypical children, that is, a mental examination, a complete medical examination, family history, personal history from infancy, a record of home conditions and a school record. Photographs and X rays are helpful in diagnosis and remedial work (G). [276:66] One school system also had an exercise chart which was constructed by the orthopedic surgeon on the basis of the diagnosis (G).

Stevenson found, in a survey of cripples in Chicago, that 83 per cent of the cripples under 21 years of age had been crippled under the age of 6 years. This emphasizes the importance of preventive work with preschool children and the early selection of school children for special treatment. [274:12] [276:19] One school system visited (F) enrolled them at the age of five, and the rest enrolled them as soon as they entered the first grade.

The common practice seems to be to exclude mentally defective children from schools for cripples. [273:11] [105:52] The

TABLE XIII

CAUSES OF CRIPPLED CONDITION, WITH PERCENTAGE THAT EACH CAUSE IS OF THE TOTAL *

Cause of Crippled Condition	Average	Rank	Rank by *256*	Mont-clair[1]	*270* [2]	*265*	*271* [3]		*277*	*272*	*276*	*11*	*262*	*275*
							1917–18	1921–22						
Infantile paralysis	43	1	1	50	27.26	30	50	62	17	42	51	37	67	50
Spastic paralysis	......	......	......	4	......	......	17	10	......	10	16	14	......	......
Surgical tuberculosis	14	2	2	1	23.54	25	33	18	5	18	7	17	13	25
Congenital deformities	9	4	3	2	13.15	12	......	......	......	......	10	5	7	......
Rachitic deformities	12	3	4	......	8.05	7	......	......	20	......	......	......	......	......
Traumatic conditions	5	5	5	......	4.20	5	......	......	......	......	......	......	......	......
Osteomyelitis	4	6	......	5	3.67	4	......	......	......	......	......	......	......	......
Spinal disease	......	......	......	7	......	......	......	......	......	......	......	4	......	......
Other conditions														
Amputations	17	......	......	1	20.73	17	......	10	68	20	16	23	13	25
Muscular dystrophy	......	......	......											
Crippled	......	......	......	21	......	......	......	......	......	......	......	......	......	......
Lame	......	......	......	11	......	......	......	......	......	......	......	......	......	......
Undeveloped	......	......	......	1	......	......	......	......	......	......	......	......	......	......

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* Data from sources listed in Bibliography. The italic numbers heading the columns, indicate specific sources.

[1] Census for State Department—not computed in averages.

[2] Thirty-three institutions in 17 states.

[3] In Chicago.

author found this to be true in the classes for crippled children in the cities visited. Wallin, however, condemns the practice of denying children the advantages of orthopedic and physiotherapeutic treatment, if they can profit from such treatment, merely because they are subnormal. [33:114] The boy or girl who is crippled to the extent of loss of muscular power or locomotion and who is, in addition, mentally defective, will never be either socially or financially independent and is probably much better off in an institution or under adequate home care. Special classes for this type of crippled child would be neither socially nor economically justifiable. One school system excluded children if they were unable to use the toilet (A), and another excluded cases of tuberculosis of the bone, although there seems to be no justifiable reason for so doing in either case (C).

Assignment. Six of the cities maintained special schools for crippled children (A, B, D, E, F, G). One city had an arrangement with a private home for crippled children whereby the equipment and instruction were furnished by the Board of Education (C).

Hall gives four classes of crippled children eligible for education, namely, children able to attend regular classes but deformed or crippled in some respect; children whose disabilities prevent them from attending regular classes or make it undesirable for them to do so; hospital cases; and "shut ins" or those unable to attend any day school because of their disabilities. [262] To these, Orleans suggests provisions of convalescent homes and summer camps. [273:6] These latter facilities, however, are usually provided through private initiative and are not a part of the public school program.

Obviously, children unable to move must remain under home or charitable care, and be provided with home instruction and treatment. Children under treatment in hospitals are under physicians' orders and their selection is a matter of individual or social agency initiative. They are usually provided with bedside instruction by public school teachers.

The two types of facilities which the school must ordinarily provide are, then, special schools and classes, and supplementary physiotherapeutic and medical treatment in the regular classes. Most of the public school provision to-day is of the former type and reaches but a small percentage of the cripples.

Admission to special classes is usually limited to those who require transportation (A, B, C, D, E, F). [259] [275] In Chicago, admission is allowed to children whose locomotion is normal but who have deformed backs, paralyzed arms or hands, or those whose arms or hands have been amputated and who need physical treatment to fit them properly with mechanical devices. [276:65] Wood and Rowell hold that all actually diseased or deformed children should be classified separately. [305:413] Horn suggests that, in view of the tendency of city day schools to extend the education of the blind and the deaf at the expense of residential state institutions, the plants thus released might be used for crippled children. [16:303] Any advantage in treatment offered, however, could be duplicated in any city and this scheme would have the great disadvantage of taking the child away from normal social contacts and home environment. Reeves holds that the massing of large numbers of children in institutions and dormitories is injurious even for those who are normal, but it is especially undesirable for crippled children, who cannot thrive in crowds. [274:14] Wood and Rowell suggest that some orthopedic cases of the inactive type, but ambulatory, might attend fresh-air classes if their number is too few to require a special class, particularly in the case of tubercular bone lesion. [305:368]

Stevenson found that only 8 per cent of the total number of cripples in Chicago were unable to walk and that 4 per cent of these would walk eventually. [276:27] This means that if crippled children are to attain that freedom from physical defects which will permit of the maximum use of their capacities, a great deal of supplementary corrective work must be carried on in connection with the regular classroom. This corrective work is properly the work of the physical education teacher, trained in orthopedic therapy, under the direction of an orthopedic surgeon. [271] [257] Cleveland maintains an orthopedic department consisting of a supervisor and five orthopedic therapists, each of whom works in a certain district of the city and gives attention to cripples who are not so badly disabled as to permit their enrollment in the special school.[33]

Under a plan similar to this, each crippled child would have as many periods a week of physical and occupational therapy as his individual case warranted, as recommended by the orthopedic surgeon. He would be at work in the regular classes at all other times.

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[33] *Sunbeam School*, a pamphlet published by the Board of Education, Cleveland, Ohio.

Standards or policies should not be set up for assignment of crippled children to special classes but each case should be diagnosed and assigned by clinics, orthopedic surgeons, or competent physicians on the basis of maximum possible development of each boy and girl.

CASES OF LOWERED VITALITY

It has been estimated that at least one-third of the children in this country are malnourished. [288:3] This condition may include the anemic, the tubercular, the convalescent and the cardiac specifically and all other classes of defects generally. Mrs. Burke estimates that 50 per cent of the children living under adverse conditions become infected with tuberculosis before they are five years old. [283] The discovery of these children and the provision for them of remedial treatment is one of the major health problems of the school.

Selection. Because of the fact that malnourished boys and girls usually are affected by other pathological conditions, their discovery and treatment is very important. The usual, and in many cases the sole, method of selecting these children is their percentage of underweight as determined by standard height-weight charts showing the normal weight for particular heights and ages. As one of the factors in determining malnutrition it is conceivably important, but as the sole or even the main criterion it is not a valid measure and has been subject to a great deal of criticism. In the first place, it is subject to error because of the personal element involved in the measurement, usually conducted by classroom teachers. In the second place, it does not take into consideration the racial or family development of the child and, in the third place, it is conceded to be one of the least important of skeletal measurements for the determination of underweight. True underweight itself is a dependable indication of physical condition but it is questionable whether the height-weight tables commonly used are better indications of this than common pathological symptoms.

Hunt, in an experiment extending over a period of three years in which weight as determined from height and age was the criterion, concluded that its use was questionable in that results are not comparable unless taken at the same period of the year, and that the definition of malnutrition as a function of height, weight and age relationships is not statistically justified. [295:155] The United States Health Service conducted an experiment to test the validity of height-weight tables and found that out of 506 children pronounced underweight by three standard tables, a physician's examination pronounced only 210 underweight, and all three standards agreed on only 15 cases. [286] The conclusion was that they are only approximations and should be used with care. [32] [286] Mrs. Grant quotes a number of physicians as holding that the weight of a child is a practical indication of his physical condition. [292] Taylor attempts to refute her argument by stating that children within the limits of the average or even children having weight over the average may also suffer from malnutrition, a fact which is conceded by some of those who hold to the height-weight-age criterion for selection. [292] [296] Holt holds that it is the best simple method we have of estimating the state of nutrition and that its chief value lies in the interest in health it arouses in the children. [294] Its validity as a teaching device certainly should not be a guarantee of its validity as a selective agent for malnutrition. In the same periodical, Angelo Patri tells an amusing story to illustrate the fact that a child is normal to himself regardless of his rating on the standard tables. [294] Bocker holds that the malnourished may include both overweight and average children and that many children who are seven per cent underweight, according to a standard table, are normal.[34] Taylor says that if all other factors are healthy or in sound condition, we may be sure the weight is right, whatever it is, and that the test of malnutrition is not a pair of scales but a medical examination. [304] Gebhart concludes that the method has value only as a rough sorting-out of children apparently needing nutritional care and is in no sense a substitution for a thorough medical examination where this is possible. [291] Wood and Rowell sum up the case for standard tables as follows: "In no case are the terms 'underweight,' 'normal weight,' or 'overweight' to be considered synonymous with any terms meaning states of health or nutrition, such as malnutrition.

[34] Bocker, Dorothy, M.D., School Physician, Tarrytown, N. Y.

. . . Underweight is to mean any weight which is less than the table figure." [35]

They conclude that any accurate and dependable classification must be based on skeletal measurements and that no satisfactory measurements for this purpose have yet been demonstrated. Franzen [36] has been conducting some experiments which tend to show that height is the least significant of skeletal measurements for the prediction of weight. When published, the results of these experiments should furnish new instruments for determining health according to types of physique. Rowell suggests the use of weight as one screening process for malnutrition and that the criterion for selection for intensive examination should be the observed regularity of growth thereafter.[37]

Emerson states that the problem of tuberculosis is the problem of nutrition and advises the selection of malnourished cases on the basis of percentage of underweight. [288:232; 266] [289] On the other hand, Opie affirms that underweight is not a criterion for selection of tuberculosis bases. Obviously, the selection of boys and girls is dependent directly on pathological conditions determined by a thorough physical examination.

According to Bastow, the problem of anemia is the problem of general health and but very few pale, pasty and anemic looking children have anemia or leukaemia. [281]

The selection of boys and girls with cardiac inefficiency is primarily a medical problem. Bliss, however, on the basis of the examination of 60 boys at the Horace Mann School, concludes that the teacher's judgment is more reliable than the medical examiner's, in the absence of pathological conditions and defects, in interpreting power and efficiency in terms of motor accomplishment, and that too great an emphasis is being placed on the rating of the medical examiner. [282] While it may be true that the physical educator can discover the capacity of the individual for the educative process, the first consideration is the removal of defects and pathological conditions which might in any way hinder this process, and this is conceded to be the job of the physician.

Eells, Moeller and Swain give some evidences of malnourishment that may be read by the teacher, as (1) lack of ambition and vitality, (2) flabby muscles, (3) anemia, (4) underweight, (5) lessened resistance against many kinds of disease, (6) susceptibility to fatigue. [59:295] Except for the results obtained from medical examinations, the most important information concerning cases of malnourishment probably come from teacher and nurse.

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[35] Wood, Thomas D., and Rowell, Hugh G., *Health Supervision and Medical Inspection of Schools*, p. 114. [305]

[36] Franzen, Raymond, Director of Research, American Child Health Association, New York City.

[37] Rowell. (See reference to interview, p. 79.)

Wood and Rowell suggest that all children who are 10 per cent underweight and all other children, regardless of weight, who appear to be in subnormal physical condition be selected for further examination. Children in the latter class will include those who are absent from school on account of illness; those with frequent colds; those who cough, who are nervous, fretful, irritable, and children whose dispositions undergo noticeable change as work of the school year goes on; and finally, the contact cases, or those known to be exposed to tuberculosis. [305:352] The pupils in nutrition (tuberculosis) classes in Philadelphia are recruited from the Compulsory Education Bureau records; from requests to family physicians for excuses for absence; from social agencies; from visiting nurse associations; from school medical inspectors and nurses; and children returning from sanitoriums. [27:20] Sources of supply for open-air classes in New York City are contact and arrested cases of tuberculosis registered in the Board of Health Tuberculosis Clinics, or registered in the Brooklyn Bureau of Charities and in the New York Association, and similar cases referred by family physicians; sources of supply for open-window classes, are pupils transferred from open-air classes, anemic and malnutritious children selected through surveys, children who show languor and fatigue before the close of day, children frequently absent because of colds, and children referred by physicians; outdoor classes include those children registered as cases of pulmonary tuberculosis in the Board of Health Tuberculosis Clinics or in clinics of the Brooklyn Bureau of Charities and the New York Association. [26:12] The conclusion reached as a result of a survey of the schools of Philadelphia was that the ordinary physician's examination does not find those cases (i.e., of tuberculosis). [27:20] Mitchell stated that the undernourished child requires a clinical examination.[38]

[38] Mitchell. (See reference to interview, p. 98.)

The selection of cases of lowered vitality requires a complete medical examination, including a radiological examination for tuberculosis, conducted either by a clinic or by a well-qualified physician.

Diagnosis. In order that the parents may understand the significance of a child's history, in order that information concerning family and personal history may be secured, and in order that recommendations may be impressed, it is essential that the parents be present during the medical examination of the children. [281] [288:21] It is also recommended by the American Child Health Association that the teacher take a responsible part in the examination. [278:155]

With regard to the exclusion of mental defectives, there is no uniformity of practice in the city schools visited for investigation. Some systems maintain special open-air classes for mental defectives, others exclude them entirely, and the rest allow them to remain in the same class with normal children. That there is danger of doing the child an injustice by exclusion is indicated by Emerson when he says, "Malnutrition does not cause mental deficiency, but it does result, at times, in a mental retardation closely resembling the actual state of defect."[39]

Before making a diagnosis it is essential that data be obtained as to the mental status, the personal history, the family history, the home conditions, and the physical condition, including X ray, sputum, and metabolism tests. Emerson suggests that the best approach to the social causes of malnutrition is a record of the child's interests, activities, and occupations for two consecutive days, with a detailed list of all the food taken during the same period. [288:52] He gives as the causes of malnutrition, (1) physical defects, especially naso-pharyngeal obstructions, (2) lack of home control, (3) overfatigue, (4) improper diet and faulty food habits, and (5) faulty health habits. [288:4] [289] Kaiser and Norton point out that physical defects do not necessarily bear a relation to the state of nutrition and that while the correction of any child's defects is important, it is not so important from the standpoint of making him "free to gain" as Dr. Emerson terms it. [296:8] Malnutrition is not due to lack of food but to improper food and is not necessarily caused by poverty. [293] [295:8] [303] Winifred Hathaway gives eyestrain as a cause of nausea or malnutrition because the eyes take more than their share of blood from the stomach.[40]

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[39] Emerson, William R. P., *Nutrition and Growth in Children*, p. 43. [288]

Common symptoms of malnutrition are paleness, lines under the eyes, mouth breathing, flabby muscles leading to fatigue posture, round shoulders, projecting shoulder blades, curvature or rigidity of the spine, prominent abdomen, flat chest, pronated or flat feet, enlarged anterior cervical glands, ptosis, lordosis, history of tiring easily, tissue texture, anxious expression, restlessness, contrariness, timidity, forgetfulness, inattention, irritability, mental retardation, lack of resistance to disease, and underweight.[41] [281] [288:8] [293] [305:386] In view of the preceding discussion on height-weight relationship, the determination of the last symptom is a questionable procedure. Regularity or irregularity of increase in weight is more indicative than amount of weight, and failure to improve in weight either in or out of the nutrition class should require clinical diagnosis.

In the diagnosis of tuberculosis, the family and personal history is exceedingly important. Vories reports an examination of 1,000 children 6 months to 15 years of age, at the Mayo Clinic, in which 17 per cent were reported as having positive reactions. Out of the group with positive reactions, 58.8 per cent had had contact or had been exposed to tuberculosis in the home. Only six per cent of those with positive reactions were without contact histories. He quotes the investigation of Green and Forbes, and of Slater, as confirming these figures. He also found that among children with a family history of tuberculosis, there is a slightly greater percentage of tuberculosis infection than among children from families free from tuberculosis. [50]

In the cities visited by the author, active or pulmonary tuberculosis cases were either excluded or segregated in hospitals, sanitoria, or special buildings. Bocker says that the line of demarcation must be carefully worked out between active cases and others and that persistent temperature and chest diagnosis should be the determining factors.[42] In two of the school systems, X rays were taken of all cases of suspected tuberculosis and a clinical diagnosis was made (C, E).

Incipient cases or very low infection areas that have caused no constitutional disturbance, or cases of closed tuberculosis in any organ without known exposure; cases which have had tuberculosis which is now arrested or cured; diathesis cases which show a predisposition toward tuberculosis because of family history or home conditions; cases which have been exposed to tuberculosis at present or recently (contact cases); and all cases showing a positive reaction, need special care in order that they may not become active cases. [6:55] [26:12] [289] [299] [305:338]

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[40] Hathaway, *op. cit.*

[41] Bocker. (See reference to interview, p. 104.)

[42] *Idem.*

Anemia is symptomatic of something wrong in the system, usually defective teeth, rather than improper diet. It is always an individual proposition and depends a great deal on home conditions.[43] A blood count and hemoglobin test is an essential part of the diagnosis.

Practically all of the heart disease in childhood is the result of rheumatism of which chorea, or St. Vitus dance, and growing pains are but different manifestations. [279:11] An accurate personal and family history is essential in the understanding and treatment of acute rheumatism, and heart disease. Tonsilitis, myositis, growing or joint pains, and chorea are symptoms of potential heart disease. Heart murmurs and definite valvular lesions are conditions distinctly indicative of cardiac insufficiency. [305:369]

The American Heart Association has classified children with organic heart disease according to the degree of limitation of their physical capacity. [279:7] The New York Association of Cardiac Clinics adopted a similar procedure in 1921 when they classified cardiac children according to their toleration of exercise and worked out a system of physical exercises for each class. [17:293] Galdston indicates the importance of competent diagnosis when he says that there is not a single sensation associated with real heart disease which may not be caused by some other, and often insignificant disorder. [290:7]

Assignment. Cases of lowered vitality are assigned to various units in the school organization according to the severity of the defects or the type of handicap. School facilities are provided in the form of hospital and sanitorium classes, out-of-door classes, open-air schools, open-air classrooms on roofs of regular school buildings, open-window rooms, nutrition classes and a health program in the regular classes. Active tuberculosis cases are usually sent to hospitals or sanitoria or are segregated in special buildings. Cases of very severe malnutrition or anemia, where the child is physically unable to get along in the regular class, organic heart disease, and all cases of tuberculosis other than active cases are usually assigned to special open-air schools or classes and open-window rooms. Sometimes pupils convalescing from a disease, especially of the respiratory tract, are temporarily included.

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[43] Bocker. (See reference to interview, p. 104.)

Cleveland has discarded the open-air classes held on roofs of school buildings and has substituted open-window rooms. They have thereby affected a saving of considerable sums formerly spent on special outdoor clothing and find the conditions just as conducive to health building. [8:104] Detroit houses all cases of lowered vitality except the tubercular cases in open-window rooms unless they show no change, in which case they are transferred to the open-air classes. [10:34] New York City maintains outdoor classes on abandoned ferryboats for pulmonary tuberculosis cases, open-air classes for tuberculosis contact cases, and open-window classes for non-contact diathesis cases, and for malnourished cases. [26:12] Emerson found that those who sleep on porches or under window tents gain in weight faster than those who sleep in a room with several windows open. [288:124] This is significant only if each group holds its weight comparably over a period of time. Mitchell advises that only active cases of tuberculosis be assigned to special classes. [44]

Emerson estimated that not more than 8 per cent of the 20,000 heart cases in New York needed to be denied any of the normal activities of childhood. [287] Bainton says that less than one out of 20 children having heart disease needs to rest in bed at school or remain in bed all the time. [279:10] Although cardiac children may have graduated exercises and may indulge in ordinary activities, they should be in open-window rooms because of the special supervision available which is so necessary to their continued activity. Seven of the cities visited made special provision for cardiacs in the school organization; two in special classes, two with cripples, and three in open-air classes (A, B, E, F, G, H, J). Bocker stated that too many children suffer from anemia to make it a special class problem.[45]

New York City has found the following benefits from open-air classes: (1) physically subnormal children improve in mental and physical condition, (2) their nutrition and weight improve and this gain can be maintained, (3) arrested tuberculosis cases have no relapse, (4) exposed cases remain in good health and do not contract tuberculosis, (5) cardiac cases, kept under proper medical supervision, improve markedly. [26:113] In one of the cities visited, one of the greatest values of the open-air class was its agency as a powerful factor in the distribution of health knowledge (F). There seems to be no reason why all of the benefits of the open-air class cannot be obtained in the open-window classes, insuring greater facility of administration and greater economy.

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[44] Mitchell, Harold H., M.D. (See reference to interview, p. 98.)

[45] Bocker. (See reference to interview, p. 104.)

All ordinary cases of malnutrition are usually cared for by a nutrition class which meets once or twice a week or by a general school health program which includes the provision for milk and lunches. There is considerable opinion in favor of extending the benefits of the nutrition class to all children in order that the well-nourished child may be encouraged to remain so. [295:235] [296:10] [305:352] Emerson states that the open-air classes were originally intended only for children below par, but it is now realized that conditions which make the sick well are favorable for all. [288:124] The regulation of home conditions is an outstanding factor in promoting better nutrition. [296:9] The nutrition class is then a means of bringing the home and school into closer relationship through the requirement that the parents attend the class with the children. Its methods of instruction also foster an interest in and a knowledge of health factors which the children will use to maintain their health after normality has been reached. [288:186; 228]

The nutrition class should have a place in the school organization but in no sense should replace a general health program for all children. Rogers and Philipps, in an investigation of school health work in the United States, found that 74 per cent of the cities over 100,000 reporting had nutrition classes, 68 per cent had open-air schools, and 34 per cent had open-window rooms; that 61 per cent of the cities between 30,000 and 100,000 had nutrition classes, 30 per cent had open-air schools, and 34 per cent had open-window rooms; that 54 per cent of the cities between 10,000 and 30,000 reporting had nutrition classes, 7 per cent had open-air schools, and 12 per cent had open-window rooms; and that 79 per cent of the communities between 2,500 and 10,000 furnished noon lunches or mid-morning lunches or both. [302]

This would indicate that special class provisions in smaller school systems is limited to nutrition classes or school feeding. It should be administratively possible to furnish open-window facilities for cases of lowered vitality regardless of the size of the community, even to the extent of maintaining normal children in the same room with children of lowered vitality in order to accord to the latter the benefit of fresh air.

THE RELATION OF THE PHYSICAL EDUCATION PROGRAM TO THE SCHOOL HEALTH PROGRAM

Although special class facilities need be provided for less than 12 per cent of the school population, 46 per cent are in need of periodic treatment in order that their defects may be removed, or require arrangements whereby their handicap will not hinder them in their school work. If the physical defectives were graded subjectively according to seriousness of the defect and necessity for correction, and if the physical education department devoted one-half of its time under the advice of the health department to the systematic correction and treatment of these defectives as part of the regular physical education program, surprisingly large dividends would be paid in child welfare and increased school efficiency. A plan such as this could in the beginning include only the most severe and obvious cases not otherwise cared for, but as results became apparent, it could be extended to include all children, however slightly affected.

SUMMARY

1. A complete physical examination is essential on entrance to school and at intervals thereafter.
2. Medical inspection in cities tends to be routine and cursory and in rural communities to be inadequate and inefficient.
3. The teacher should have an important part in the physical examination and in the detection of defects in children in the classroom.
4. The presence of parents at a complete physical examination

is essential to a thorough knowledge of the case and is an important factor in securing home corrections of defects.

5. There is a need for standardization of medical examination procedure.

Visual Defectives

1. The eyes of all school children should be examined annually.
2. Routine eye tests do not always reveal defects.
3. The observation of evidences of eyestrain by the classroom teacher is an important factor in discovering visual defectives.
4. The Snellen test cards are satisfactory charts to use for initial selection.
5. Defects in the mechanical make-up of the test cards tend to invalidate the findings.
6. Acuity of vision should be recorded in standard measures.
7. An acuity test should always be followed by an ophthalmologist's examination in all cases where visual acuity is 20/40 or less; 20/30 or 20/15 with eyestrain; and 20/10 or more.
8. Potentially hyperoptic children are difficult to discover by simple acuity tests.
9. The three most common causes of low vision in the order of occurrence are hyperopia, myopia, and astigmatism.
10. The ocular standards of admission to sight-saving classes adopted by the National Society for the Prevention of Blindness are adequate.
11. Those who are both mentally and visually defective should not be admitted to regular sight-saving classes if other provisions are available.
12. The blind should be educated in the public day schools where numbers are sufficient to warrant provision for them, but they should not be educated with the partially sighted.
13. Provision for glasses or medical treatment is the first measure to take in the education of visual defectives.
14. The assignment of visual defectives to special classes should always be made on the recommendation of an eye specialist.
15. If provided with readers, visually defective boys and girls of high school attainment can compete on equal terms with normal high school pupils.

Hearing Defectives

1. The hearing of all school children should be tested annually.

2. In situations where a hearing test is not given, the teacher is able to detect seriously defective hearing by means of games and dictation exercises.

3. The whisper and watch-tick tests are unsatisfactory from the standpoint of uniform control of testing conditions.

4. The 4A Audiometer is the most effective device for testing the hearing of large numbers because of its simplicity, range of capacity, and accuracy.

5. Every boy and girl with defective hearing should be examined by an otologist.

6. In the diagnosis of deafness, family history, personal history, and medical examination are very important.

7. Mentally deficient deafened boys and girls should be segregated in institutions or under community custodial care.

8. Hearing defectives should be given instruction in speech reading as early as four years of age.

9. Children should be assigned to special classes or instruction in speech reading on the basis of degree of hearing and possibility of learning speech.

10. Deafened children who have lost their speech should be differentiated from those who are deafened and retain their speech.

11. Instruction for the hearing defectives should be provided in special schools for the congenitally deaf or the adventitiously deaf who have lost their speech at an early age, in special classes for the very hard of hearing, and in part-time lip-reading classes for the slightly deafened. In some cases the latter can be adequately cared for by advantageous placement in the classroom.

12. Assignment should be made only on the recommendation of an otologist.

Speech Defectives

1. Children have acquired the majority of their speech defects before the age of nine years.

2. Speech correction should begin in the kindergarten or in the preschool period.

3. Because most defects have a psychogenic origin, it is im-

portant to give each speech defective a thorough psychological examination.

4. Speech defects are classified as stuttering and stammering, phonetic defects, and the speech of mental defectives.

5. Stuttering and stammering are usually attributed to emotional disturbances.

6. The individual rather than the defect must be studied in diagnosing speech defects.

7. Classes for speech defectives should be established on a part-time basis as many times a week as the condition of each individual indicates.

8. Physical defects and emotional causes should be removed before boys and girls are assigned to special classes.

Orthopedic Defectives

1. Annual examinations should be held to discover all types of crippled children.

2. Discovery of all crippled children can only be accomplished through a survey of the community.

3. The value of a clinic for examination of crippled children lies in the effectiveness of diagnosis and in the stimulation of public opinion for remedial treatment.

4. Diagnosis of causes of the crippled condition in a boy or girl is important from the standpoint of instruction and treatment.

5. Infantile paralysis is the only cause of crippled conditions for which there is no cure or preventive measure.

6. Photographs and X rays are helpful as supplementary evidence in diagnosis.

7. Most of the cripples become crippled before the age of six years and for that reason should be selected for special education on attaining the age of entrance to school.

8. Mentally defective crippled children without ambulatory power should be segregated in institutions or under local supervision.

9. The public school should make special class provision for crippled children who are seriously crippled or diseased, and should provide periodic treatment for crippled children able to attend regular classes.

10. Assignment should be made on the recommendation of an orthopedic surgeon.

Cases of Lowered Vitality

1. Weight as predicted from height and age is not a satisfactory basis for selection of malnourished boys and girls.
2. Regularity in growth is an important factor in determining state of health.
3. A thorough medical examination is the only reliable measure of state of nutrition and of cardiac deficiency.
4. All children, regardless of weight, who appear to be in subnormal physical condition should be selected for intensive examination.
5. The examination of malnourished children should include a radiological examination for tuberculosis.
6. It is essential that the parents of the children examined be present at the examination.
7. Caution should be exercised in excluding children diagnosed as mentally defective from open-air classes in that the conditions observed may be partly induced by the physical defect.
8. Malnutrition is caused by improper food and faulty food habits, over-fatigue, lack of home control, and diseases of the respiratory tract.
9. Family and personal history is very important in the diagnosis of tuberculosis and heart disease.
10. Boys and girls with active tuberculosis should be provided with hospital or sanitorium care.
11. Rheumatism causes practically all of the heart disease in children.
12. The school organization should provide an adequate health program for all malnourished children; part-time nutrition classes for malnourished children whose food habits or home diet need correction; open-window or open-air classes for seriously malnourished or anemic children, all tubercular children except active cases, and children convalescing from serious illness and organic heart disease cases; and segregated classes or schools for active tubercular cases.
13. There is reason to believe that most of the convalescent group can be as adequately cared for in open-window rooms as in open-air classes.

14. Although many cardiacs can successfully cope with the situation found in the regular class, they should be in open-window room or open-air classes in order to receive continuous supervision.

15. The nutrition class is an important factor in bringing about a closer relation between the home and the school, and in fostering health knowledge in the children.

The School Health Program

The physical education program could be made a significant agency for the removal of minor defects in great numbers of children now unprovided for.

CHAPTER VI

SELECTION, DIAGNOSIS AND ASSIGNMENT

THE TEMPERAMENTALLY ATYPICAL

Boys and girls who deviate from the normal only in their actions and activities and who are mentally and physically normal, are a misunderstood group in the public schools. The tendency is to punish them or to tolerate them rather than provide corrective means similar in purpose to other special facilities, i.e., to remove the cause of the disability and allow the pupil to develop his capacities to the maximum. The causes of anti-social attitudes and actions usually lie deeper than the immediate stimulus which impels their exhibition and for which the boy or girl is held to account. Yerkes sums up this situation as follows: "Instinctively, emotionally or morally peculiar or defective children are quite commonly described as queer, uncontrollable or even lacking judgment. We have no suitable term for this class of unfortunates.

"These peculiarities often appear in connection with excellent intelligence and they are socially and economically all the more serious because of this fact. . . . In the group of affective deviates appear juvenile delinquents, the uncontrolled or incorrigible, and from it are recruited criminals, and in general those individuals who tend to become social derelicts and menaces." [1]

The author realizes that his classification into two types, the neurotics and the truants, incorrigibles and delinquents, is wholly unsatisfactory from the standpoint of selecting the individual, yet he feels that it is important to have two classifications, even though they are not mutually exclusive, in order that the boy or girl who has not yet become anti-social, that is, who is only a "problem" and not a "case," may be separated for educational and social reasons from the boy or girl who has already stepped beyond the bounds of conventional conduct. Future experimentation should furnish the means of selecting and treating neurotics early enough to eliminate all truancy, delinquency and incorrigibility. In addition, the curriculum, methods of instruction and attitude of the teachers will have to be changed in the light of the discovered needs of this type of boy and girl.

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[1] Yerkes, Robert M., *How May We Discover the Children Who Need Special Care*, p. 3. Massachusetts Society for Mental Hygiene. [36]

NEUROTICS

Selection and Diagnosis. The neurotic boy or girl usually stands out in the classroom as a problem, either of conduct or of attitude and because of this fact is comparatively easy to detect. If the school has been classified by intelligence tests, there will always be a child in every three or four classes whose difficulties arise from some other cause than that of intellectual backwardness. [17:184] The teacher should refer all behavior problem children, for whose deviations they have neither an explanation nor a correction, to the psychologist or psychological clinic for diagnosis.

A common form of neurosis is that which appears in the intellectually superior boy or girl who has difficulty in making adaptations to his school environment. The ordinary school curriculum does not challenge his ability; so he finds more time for day-dreaming and introspection; the play activities do not interest him, and result in attitudes of seclusion, solitary play, timidity and similar reactions; and the fact that he is usually the youngest in the class is apt to give him a feeling of inferiority. Hodgkinson found that most cases of psychopathic personality were likely to be found among children of normal or superior intelligence rather than among the lower mental levels. [15:171]

Exclusive of mental subnormality, disease, or physical ill health, neurosis is very apt to manifest itself in defense mechanisms, formulated because of emotional conditions which have arisen out of the environment, out of vicarious living with books or plays, or out of the imagination. Contemporary writers concede to the modern youth more freedom of thought and action than ever before in history. That this new attitude arises out of environmental and social conditions is unquestioned. The development of transportation, industry, education, and social equality; the diffusion of well-being; the new position of women in the home and in business; and the invention of radio are factors which have contributed to a new social order and to consequent maladjustments in adaptation. Home conditions are affected by ignorance, prejudice, knowledge or lack of knowledge of rearing children, poverty and luxury, sickness, methods of discipline, too much or too little attention, and general cultural atmosphere, all of which are reflected in individual reactions in the child which may lead to emotional instability. In the child the influence of bad associates, adult action, external repression of natural activities, unbridled emotional impulses, personality conflicts, religion, character traits, and heredity are sometimes marked. In some cases, the fact that a boy or girl is the only child builds in him emotional reactions which lead to forms of neurosis, although this is again conditioned on other environmental factors.

A study of the neurotic boy or girl, then, involves a complete knowledge of personal history, of his school record, of home conditions, of family history, of mental status, of physical condition, of all character and personality traits, and of play and work habits.[2] It further involves the expert diagnosis of boys or girls in the light of all these facts, and with full recognition of the contribution which the judgment of the teacher who has worked with them makes to the understanding of the whole problem. It also involves the differentiation between maladjustment due to psychopathic conditions and maladjustment due to mental condition, physical defects and state of physical development.

Assignment. The early discovery of cases of neurosis is essential to the prevention of serious behavior problems later in school life. Cornell gives four directions in which we may look for early symptoms of maladjustment: (1) in overt conduct that is queer and unusual, (2) in personality traits that are socially undesirable, (3) in abnormal emotional reactions, and (4) in peculiarities of the intellectual processes. [93:11] Richards found that most of the causes of maladjustment could be attributed to conditions which arose in the first grade, and concluded that the remedy is to create better opportunities for the teacher and child to understand each other. [31] Broady advises against the enrollment of neurotics in the kindergarten except in case of improper home conditions and in situations where the normal children are not made to suffer unduly because of association. [6:141] It would seem, however, that the kindergarten would be the logical place to observe children for symptoms of neurosis in order that they might be corrected before they become fixed habits. [318:181]

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[2] The reader is referred to pages 21-23, Chapter II, for a discussion of symptoms of neurosis and types of cases. References on the above discussion: [17: 181] [35] [62: 562] [65: 266] [93] [311]

Philadelphia reports that it is impossible for disciplinary cases, who are able to do the work and are of normal age for their grade and who are handicapped by emotional impulses or complexes, to remain in regular grades.[3] Blumgart [307:338] and Woolley [35:102] advise that the problem children or the emotionally maladjusted children be established in special classes in order that they may be more carefully studied over a longer period, that they may have adequate opportunities of adjusting themselves to new situations, and that their absence may relieve the class of some of the strain of discipline. In speaking of solving the problem of neurosis by reëducation, Morgan says: "The urge to conquer defeat is a valuable urge. Direct it and it will lead to achievement. Let it become perverted and it will lead to one of the most pernicious mental disorders that we know."[4]

The assignment of boys and girls to special classes because of neurosis is temporary and return to regular classes is conditioned upon sufficient adjustment to permit of the formation of desirable habits. Irwin and Marks suggest that a good test of whether the boy is prepared to return to the regular class is whether he wishes to go back. [17]

In only one of the school systems visited were the neurotics placed in a special class and this class was discontinued because the "clash of temperaments" made it unmanageable (L). Another system placed the neurotics with the incorrigibles, and a third placed them with the mental defectives (G, M). In most cases the problem was not recognized as one demanding special treatment.

The combination of psychic traits which serves to single out a boy or girl for special treatment depends upon the success with which the teacher can handle the problem, the persistence of the traits, and the character of the reactions of the individual. Certainly, he should not be placed with mental defectives and it is questionable whether he should be placed with the incorrigibles although his actions may lead him to become so.

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[3] Annual Report of the Director of Special Education, Philadelphia, Pa., 1928.

[4] Morgan, John J., *The Psychology of Abnormal People*, p. 562. [62]

TRUANTS, INCORRIGIBLES AND DELINQUENTS

Selection. The initial selection of truants, incorrigibles and delinquents is obviously simply a matter of routine. Cases may be referred from the attendance officer, the teacher, the parent or social and municipal agencies. The diagnosis of the boy or girl and the determination of the seriousness of the offence is no such simple matter. Many of these cases have a basis of neurosis and should be diagnosed as indicated in the section last preceding. Wallin places the responsibility for delinquency directly on the school. [33:181] Reed indicates that there is a very close and significant relationship between retardation and truancy, truancy and juvenile delinquency and adult crime. [30:66] Burt sees it as a larger problem. He says, "The problem of delinquency in the young must be envisaged as but one inseparable portion of the larger enterprise for child welfare."[5]

The teacher was responsible for the selection of delinquents in five of the eight school systems visited which maintained special classes or schools for truants or delinquents (A, B, G, J).

Burt urges the selection of young persons who show delinquent tendencies at the earliest possible stage. "Parents should be taught that the preschool period is the period vitally decisive—foundations of moral character and temperamental eccentricity are first laid down."[6]

Diagnosis. The importance of a case history for every boy or girl who has been selected as truant, incorrigible and delinquent cannot be overemphasized. It should consist of a record of the psychological examination, including intelligence tests of both the verbal and performance types, tests for special abilities, tests of temperament and vocational tests; personal history by a skilled observer, including a thorough exposition of past delinquencies and of the present crisis; family history, including medical, social, educational and economic factors, based on social investigations by qualified workers; personal habits, including running away, staying out nights, stealing, lying, early or excessive drinking or smoking, fighting or bullying, and sex habits; educational history to include a chronology of total school experience and all personal factors which may have been noted; medical history including physical disease, physiological habits, nervous diseases, and physical development; and a stenographic or detailed record of interviews with examiners, including responses concerning associates, amusements, use of leisure and attitude toward school.[7]

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[5] Burt, Cyril, *The Young Delinquent*, p. 585. [309].

[6] *Ibid.*, page 584.

Van Waters suggests that the child be protected during the investigation and pending treatment, from any trace of penal procedure, and that the point of view of the child of foreign parents be considered. [321]

An essential part of the diagnosis is the examination of all data to determine the causes of delinquency in order that the correction may fit the underlying motives or conditions rather than the deed itself. Burt[8] gives the following as a summary of causes of delinquency:

I. Hereditary Conditions
    A. Physical
    B. Intellectual
    C. Temperamental
        1. With pathological symptoms
        2. With moral symptoms

II. Environmental Conditions
    A. Within the home
        1. Poverty
        2. Defective family relationships
        3. Defective discipline
        4. Vicious home
    B. Outside the home

III. Physical Conditions
    A. Developmental
    B. Pathological

IV. Psychological Conditions
    A. Intellectual
    B. Emotional
        1. Inborn
            (a) Specific
            (b) General

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[7] [4] [64: 13] [115] [309: 598] [313] [321]

[8] Burt, Cyril, *op. cit.*, pp. 576-9. [309]

2. Acquired
   (a) Interests
   (b) Complexes.

Horn attributes truancy and incorrigibility to nomadism, harmful home conditions, educational maladjustments, failure to control bad habits at their incipiency, and the restlessness of adolescence. [16] Jones gives additional causes as street play, social conditions, childhood nature, physical condition, and mental defectiveness. [316]

Experience at the Thomas A. Edison School for Boys at Cleveland has shown that a partial answer to the problem may be that the educational procedure is not yet varied enough to arouse the coöperation of all types of personality, and that it is a question whether or not in some cases the home environment does not destroy morale faster than the school can build it up. [8:94] Berry attributes delinquency to retardation, home environment, heredity and wrong use of leisure time. [4] Burt found that defective physical conditions were about one and a quarter times as frequent among delinquent children from the same schools and streets. [309:239] Mateer considers delinquency as a natural phenomenon. She says, "It is as much a part of the growing and changing race as deserted cities, obsolete weapons, and discarded ways of living. It is the result of the mental residuum of former stages, and of imperfect attempts to produce individuals who can live naturally in the present stage of development."[9] While a small number may be with us continuously because of this, the great disparity in numbers as between cities and as between school systems would point to the conclusion that it is primarily a question of acquired characteristics and environment, and, because of that, remediable. [140:263]

Earlier studies have attributed the major portion of delinquency and truancy to feeble-mindedness or mental subnormality.[10] Freeman attributes the error of earlier studies to comparison with unrepresentative norms or uncomparable groups in that persons of certain intelligences commit certain types of crimes, and delinquents and non-delinquents are not distinct groups. He says, "The statement that the person of low intelligence is a potential criminal can be matched by the statement that every person of any intelligence level is a potential criminal."[11] He concludes that except for the lowest-grade mental defectives, intellectual capacity appears to be only a subordinate contributing factor in conduct.

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[9] Mateer, Florence, *The Unstable Child*, p. 227. [317]

[10] [16: 186] [114: 18] [308] [312] [314] [315]

A survey of Cincinnati's mental health showed that 45.4 per cent of the delinquency cases carried by courts and social agencies were mentally subnormal or border-line. [319] Davis blames the public school rather than the condition of mentality for the large proportion of mental defectives who go to prison or become human derelicts. [96] Curtis argues against the application of statistics of mental tests as developed for children being applied to adult delinquents. On the basis of the army tests results in 1918, he says that if 40 per cent of the delinquents are morons, then 40 per cent of all people are morons. [310] Fernald states that 1 to 3 per cent of the elementary school children are permanently subnormal or feeble-minded and there is no such ratio as this of pauperism or idleness or criminality. [103] Miner concludes that not more than 10 per cent of the ordinary children who come before the juvenile court are mentally deficient. He states that the elimination of a generation of deficients will not solve the problem of delinquency but in no other way is there open such a clear and definite way of reducing that problem. [72:166; 169]

Doll [98], Hodgkinson [15:1V] and Ellis [58:371] found that there was not a close connection between delinquency and mental defectiveness. Jones concluded that the intelligence of delinquent boys would be found to be distributed in about the same proportion of bright, normal and dull as any other group of children. [316] Practically this same conclusion was reached in a study in New York City. [26:178] Robinson, however, found that 25 per cent of the delinquents studied were feeble-minded and the rest were in ability groups below average. [126] Pintner says that all reports agree on finding a much smaller percentage of delinquents of superior intelligence as compared with the amount of superior intelligence supposed to exist in the population at large, though the intelligence rating is not prognostic of future success. [75:300] Most of the children assigned to disciplinary classes in Philadelphia were also retarded in school.[12]

[11] Freeman, Frank N., *Mental Tests*, p. 442. [69]

[12] Annual Report of the Director of Special Education, Philadelphia, Pa., 1928.

A distribution of the Intelligence Quotients of 305 girls from the Jane Addams School in Cleveland showed an I. Q. range of 75 to 130 with a median of 101, or practically a normal distribution. Obviously, the mental deficients were not disciplinary cases but were merely assigned to special classes with others of their type. A similar distribution of the Intelligence Quotients of 1,228 boys from the Thomas A. Edison School for Boys in Cleveland showed an I. Q. range of 60 or below to 120 with a median of 86.[13] In a study which the author made of data on mental deficients in special classes in Trenton, New Jersey, 18 per cent of 411 enrolled were recorded as having been habitual truants prior to 1917-18, while only 5 per cent of 338 enrolled were recorded as having been habitual truants prior to 1928-29. This decrease can probably be attributed to the special educational facilities offered these children. Of the 29 children who had been subjected to police search in 1928-29, only 2 were charged with sex offenses.[14]

Most studies that have been made of delinquency disregard two very important factors, namely; that the great number of retardates among delinquents is an indictment of the school for allowing the retardation, in fact, inability to profit by the work offered may have been the contributing cause of the delinquency; and, secondly, that the mentally subnormal are more susceptible to suggestions of others, less resistant to temptation because of lack of judgment and reasoning power, and less able to think their way out of difficult situations, thus making their detection easier. In other words, what has been proven by most studies of mentality and crime is not that mental subnormality is a cause of delinquency but that more subnormals are caught. [15:153]

The evidence seems to point to the fact that although mental subnormality is a factor in delinquency, it is in no sense a major cause and is important only to the extent that adequate educational facilities are offered by which the boy or girl can profit, or to the extent that adequate supervision is provided.

Assignment. Woolley and Hart suggest that a feeble-minded child of any degree of deficiency who becomes seriously delinquent should be segregated, preferably in institutions. [140:264]

[13] Data furnished through the courtesy of L. C. Bain, Division of Child Accounting and Statistics, Cleveland, Ohio.

[14] Data furnished through the courtesy of Miss Julia Maier, Supervisor of Special Education, Trenton, N. J.

Miner would class border-line cases which show serious and repeated delinquency as feeble-minded. [72:18] None of the school systems visited excluded feeble-minded children from special classes or schools for truants or delinquents except as they were probated in court for more serious offences.

Only two of the school systems visited provided special classes or schools for girls (A, D). The rest maintained that it was impossible to conduct schools or classes for girls which would not stigmatize the pupils as immoral, regardless of the offence committed. It was apparent that the need for classes for girls was not nearly as pressing as for boys, either because of guidance measures in school or because girls were less disposed toward delinquency. Very few cases of truancy among girls were reported. Most of the cases of delinquency among girls were adjusted in the home room of the school either by direct action or by a change in surroundings.

Two of the school systems visited maintained 24-hour, or parental homes for younger delinquents whose home conditions were unsatisfactory (A, B). Three school systems visited maintained teachers in temporary detention or probation homes for cases awaiting trial by the juvenile court (C, D, F). Two schools were held in municipal and county homes, respectively, the Board of Education furnishing the teacher (H, J). In all of the schools, a conscientious effort was made to correct delinquency or truancy, first by special adjustment in the classroom, and then by transfer to other schools, before the pupil was sent to a special school or committed to the care of the court.

One superintendent maintained that the policy of adjusting school conditions to fit the needs of the child was so successful that there was no need for special classes or schools for delinquents or truants (E). In one of the smaller school systems, the superintendent placed the responsibility for delinquency squarely on the parents' shoulders, not taking any action against the child except exclusion until he could adjust himself to school conditions. In case of irresponsible parents, the boy was committed to a farm (N). It would seem that this was merely postponing the eventual cropping out of greater delinquency rather than determining the source of the trouble. Only one system placed the responsibility for assignment directly with the psychological clinic (B). In view of the need for differential diagnosis the psychologist should have a great deal of such responsibility.

Facilities provided for truants and delinquents include residence or parental schools on a 24-hour basis; commitment to municipal, county and state institutions by the Juvenile Court; special schools and classes in day schools; and vestibule or temporary classes where the boys and girls are segregated for observation. There is reason to believe that all except the first and last of these can be dispensed with by adjustment in school, transfer, and provision for educational offerings and activities commensurate with the abilities and needs of the pupils. A great many boys and girls suffering from neurosis are now placed in special classes for truants and delinquents and special educational provisions for these boys and girls will still further obviate the necessity for these classes.

Philadelphia places boys of the disciplinary type, whose home conditions are uncontrollable and detrimental to the welfare of the child, in the Shallcross school which is built on the cottage plan with individual units housing 20 or 30 boys each, under the supervision of a house "father." It has been very successful to the extent that the graduates invariably make good in occupations.[15] Harbesen suggests the 24-hour school for potential delinquents sent for supervision and not for delinquency. [313] In the ungraded classes of Detroit, 60 per cent were sent for truancy and 40 per cent for incorrigibility. Fifty per cent of the truants were cured, 30 per cent of them were much better, and little change was noticed in the rest. [11:76]

Reavis says that many of the cases referred to the Juvenile Court are semi-delinquent in character and are rightfully the problems of the school. [29:54] McDonald holds the same viewpoint when he says, "In the last analysis, the potency of judges and courts is chiefly deterrent. They undoubtedly fulfill a very important function, yet we cannot but recognize that the problem of the juvenile delinquent is less the problem of the juvenile court than it is that of the public schools. Every possible effort should be made to keep the young delinquents out of court entirely."[16]

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[15] Annual Report of the Director of Special Education, Philadelphia, Pa., 1928.

[16] McDonald, Robert A. F., *Adjustment of School Organization to Various Population Groups*, p. 24. [19]

That the juvenile courts have provided a valuable release from the notoriety and mature character of the regular court, and that they have admirably served the purpose for which they were instituted, cannot be denied. Nevertheless, the time that sees the juvenile court unnecessary for school offenders will see a new era for boys and girls who are potentially delinquent.

Van Waters suggests that the older boys and girls may be better off in industry if the school does not challenge their abilities or provide activities commensurate with them. [321] If assurance can be reached that the new adaptations acquired will eliminate delinquent tendencies, such disposition of delinquent cases would be well worth while, but as yet we have no measuring stick whereby we can determine this except trial, and this is a dangerous procedure both for the delinquent and for society. Reed suggests that vestibule schools be established for young workers under the guidance of sympathetic teachers. [30: 425] School system A has tried a vestibule class where truants and delinquents are sent for observation before assignment to special classes or return to regular classes. This class has been remarkably successful in detecting causes of delinquency, the removal of which has made it unnecessary to send pupils to special classes or schools.

The public school should look toward the elimination of all special educational facilities for delinquents and truants, except for residential homes necessitated by home conditions, and for observation classes, desirable from the standpoint of diagnosis and correction.

SUMMARY

1. The classification of the temperamentally atypical group into neurotics, and truants, delinquents and incorrigibles does not set them apart as different types except in degree.

Neurotics

1. The neurotic, because of overt actions or attitudes, is easy to select, especially if he is one of a homogeneous intellectual group.

2. Neurosis commonly appears in boys or girls of average or superior intelligence, who are educationally maladjusted.

3. The teacher's judgment about an individual whom she has

observed in the classroom is one of the most important factors in diagnosis.

4. Early discovery of neurosis is essential to the elimination of serious disorders later in school life.

5. Special classes are desirable for neurotics because of conditions conducive to the formation of good habits and because of the improved disciplinary situation in the regular class.

6. Removal of the emotional cause of the neurotic condition is necessary before a boy or girl can be adapted to his environment.

Truants, Incorrigibles and Delinquents

1. Many of the truants, incorrigibles and delinquents are neurotic.

2. One is very apt to find truants and delinquents among the retardates in a school system.

3. Children should be observed for delinquent tendencies in the preschool period.

4. A complete case history is essential to the diagnosis of truancy and delinquency.

5. The remedial treatment should fit the cause rather than the overt act.

6. Educational maladjustment, bad home conditions, and character traits are probably the greatest causes of truancy and delinquency.

7. Mental subnormality is not a direct cause of delinquency although it may predispose an individual toward the easy acquisition of undesirable characteristics which make for delinquency.

8. The school systems visited find it very difficult to establish classes for girls because of the stigma of immorality attached.

9. Provisions in the school systems visited included parental or residential homes for delinquent boys and girls whose home conditions were unsatisfactory; municipal or county homes to which the school system sent a teacher; temporary detention homes for cases awaiting court trials; special schools and classes; and vestibule classes for observation.

10. In all the cities visited, boys and girls were given guidance for adjustment in the classroom or were transferred to a new

environment before assignment to special classes or schools was resorted to.

11. Assignment of truants and delinquents to a special school or class should be made only after a thorough diagnosis which should preferably be made by a psychologist.

12. The school, rather than the juvenile court, should squarely face the problem of juvenile delinquency.

13. In some cases, assignment to industrial work is preferable to continuance in school, but assurance must be had that the new environment will relieve rather than aggravate the condition.

14. Most of the truancy, delinquency and incorrigibility can be eliminated from the school.

CHAPTER VII

FOLLOW-UP

The discovery of atypical boys and girls in a school system, the accurate determination of their condition, and their assignment to classes in the organization which will best fit them to use their capacities to the fullest extent, is but the first step in the provision of proper educational facilities. The degree of success they attain in their school environment, measured by physical, mental, moral and social standards, and the manner in which they fit into the social order as self-sufficing members after leaving school are the criteria which should be held for the adequacy of their education.

They should be provided with a physical environment comparable to that which is held desirable for normal children; teachers whose training and personality fit them to understand the special problems involved; a curriculum formulated to meet their individual needs and capacities; corrective and remedial treatment which will reduce or eliminate their physical, mental and temperamental handicaps; vocational, educational and personal guidance in the choice of their school activities and in anticipation of future careers; and after-care in the period of adjustment after leaving school. This chapter is primarily concerned with the two last-named types of follow-up.

No pupil should be retained in a special class whose individual needs can be met as well in the regular class and whose physical defects have been corrected to the point where the regular health program can adequately care for him. The first consideration of a follow-up program, then, is effective periodic reëxamination to determine the feasibility of transfer back to regular classes or to measure the effectiveness of the program now being provided. [33:108] On the physical side, the correlation between increase in number of defects and increasing retardation or loss in achievement, [21:32] makes a periodic physical examination imperative. In England, every child receives four thorough medical examinations during his school life—at entrance, at the age of 8, again at 11 or 12, and again, one term before he leaves school. Every child found to have physical defects is reëxamined at the end of six months. In the interim between any two of these examinations physical inspection is made by the school nurse who reports health defects to the school physician. [102:5] In the United States there is no uniformity of practice with regard to physical examinations. In cities, the department of health, either city or school, usually arranges for the physical examination of all school children by the school physician and cases requiring special attention are followed up by the school nurse. In rural communities, there is very seldom any follow-up except where county nurses or state clinics have been established, such as in Minnesota and in North Carolina. [48:208]

The Rural School Survey of New York contained this recommendation: "The only justification for a physical examination is the correction of defects. This requires follow-up." [46:247]

There are certain conditions, such as home environment and economic status of the family, with which the school is usually unable to cope. Social and charitable organizations carry on this phase of social welfare. The welfare of each boy and girl requires close coördination between these agencies and the school. A plan to accomplish this has been worked out in Baltimore City, Maryland, in the form of a mimeographed pamphlet containing suggestions to social workers and to teachers, a list of all existing social agencies and their purposes, and instructions for reporting cases.[1]

An adequate discussion of follow-up procedure would require a volume in itself. The author feels, however, that it is within the proper scope of this work to indicate some of the essential features applicable to each of the types of atypical classes discussed in the preceding chapters.

THE MENTALLY SUBNORMAL

According to Hodgkinson, the real efficiency of an educational program depends largely on the thoroughness of the follow-up service which is organized in connection with each school. [15:

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[1] This pamphlet was furnished to the author through the courtesy of Miss Elsie M. Saulsbury, Executive Assistant, Administration Building, Baltimore, Md.

391] Irwin and Marks consider the initial survey and placement of mentally subnormal children incomplete unless it is followed up for at least one term by the services of the psychologist who remains in and with the school to interpret the technical findings for the practical use of the teacher. [17:58] The clinic is an important agency in that it keeps the records of each child and can keep and furnish subsequent history. [114:283] It is obvious that all records pertaining to these boys or girls should be in the hands of the teachers or be made available to them in order that they may understand the reactions of these children in the classrooms in the light of all information that has been used as a basis for assigning them there.

Reëxamination of the mentality and achievement of all special class pupils is an important service in interpreting progress and in determining the desirability of return to the regular class. Massachusetts requires such reëxamination every two years. [118:3] New York City recommends the reëxamination of all children in ungraded classes at least once a term. [26:12] School system D gives frequent retests to determine fitness for regular class; school systems G and A give tests every two years in addition to transferring children back on the initiative of the teacher. In the rest of the school systems visited reëxamination is very haphazard. System G provides for medical examinations on call, I gives routine physical examinations three times a year, H requires the school nurse to check up every two weeks for physical defects or diseases, and K and O require a daily health inspection by the teacher. School system B provides glandular treatment for low-grade deficients.

The investigation and correction of home conditions bears an important relation to the success of children in a special class.[2] Certainly the condition of the home is an important factor and one which is properly a problem of general social welfare in the community. The school will of necessity have to bring about changed conditions through welfare and social agencies rather than through direct action. This in no way relieves the classroom teacher of responsibility for accurate knowledge of the home conditions of each boy and girl in order that she may understand his or her reactions in terms of them.

In practically all of the school systems visited a point was made of the fact that only through the direct visitation of the home could the teacher satisfactorily understand the situation. While this does not minimize the importance of social work by the visiting teacher, it does indicate that home visitation by the visiting teacher is not a satisfactory substitute for visitation by the special class teacher.

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[2] See pages 62-63.

In a study which the author made of data on 313 special class pupils in Trenton, New Jersey, during the school year 1928-29, whose home conditions were evaluated by the teachers on a scale of poor to excellent, 113 or 36 per cent were rated as poor, 85 or 27 per cent reported as fair, 113 or 36 per cent were rated as good, and only 2 or less than 1 per cent were rated as excellent.[3] This would indicate that an understanding of the home conditions of more than 50 per cent of the special class pupils in that situation would be essential for a proper understanding of their problems.

Mental defectiveness in members of the family of 157 or 50 per cent of the special class pupils, partly explained the reason for the condition of these pupils.

The need for vocational guidance is shown in the fact that 90 per cent of the mentally deficient children will become harmless, self-supporting adults [15:214], and is emphasized in studies which have definitely indicated the level of intelligence necessary for certain simple occupations. [85] [92] [97:46-51] Porteus has shown that there is a definite correlation between occupations and Mental Age and has formulated an industrial rating scale as one means of guidance. [124:240]

In the above-named study of special class pupils in Trenton, New Jersey, the author tabulated a report on the follow-up of 326 former Binet class pupils over a ten-year period, with the following distribution of occupations for boys and girls separately, as shown in Table XIV.[4]

The variety of occupations in which they were able to succeed justify the care and guidance given in school. Out of the total number for whom records could be secured, only 23 boys and 5 girls were under institutional care.

Wallin stresses vocational guidance through investigation of the individual's personality make-up, vocational aptitudes, and

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[3] Maier, Julia, Supervisor of Special Education, Trenton, N. J. (Data furnished.)

[4] *Ibid.*, p. 207.

TABLE XIV

DISTRIBUTION OF OCCUPATIONS OF MENTAL DEFECTIVES OVER A TEN-YEAR PERIOD

Boys	Number	Percentage
Delivery boys and helpers	44	18.7
Helper (general)	32	13.6
Worker in rubber company	27	11.4
Worker in pottery factory	27	11.4
Truck driver	19	8.0
Bootblack	12	5.1
Tile worker	10	4.2
Mechanic's helper	9	3.8
Car worker	6	2.5
Freight loader	4	1.7
Navy	4	1.7
Worker in woolen mill	4	1.7
Teamster	4	1.7
Worker in gas filling station	4	1.7
Railroad laborer	4	1.7
Worker in iron mill	3	1.3
Boxer	2	.8
Bottle worker	2	.8
Messenger boy	2	.8
Ash collector	2	.8
Laborer, pick and shovel	2	.8
Laborer, wire and steel	2	.8
Chair caner	2	.8
Miscellaneous (one each)	10	4.2
Total	237	100.0

Girls	Number	Percentage
Housework for pay	21	24
Housework at home	13	15
Housework at home, married	11	12
Pottery dusting and polishing	9	10
Nursemaid	7	8
Cigar factory	6	7
Dressmaker helpers	4	5
Garment factory	4	5
Clerk in store	3	3
Rubber factory	3	3
Candy factory dipper	2	2
Glassworker, hotel	2	2
Cleans electric light fixtures	2	2
Waitress, normal school	1	1
Laundry sorter	1	1
Total	89	100

contra-indications; through making an inventory or vocational survey of the positions available for mental deficients in the community; by conducting a placement or employment agency; and by follow-up aid and investigation. [33:175] Ellis concludes that there is a place for many people of inferior mentality if they have strong bodies and that the openings for them are almost unlimited if they have a fair amount of motor ability. [58:340] The need of guidance in the mentally subnormal who are not mentally deficient is even more urgent, for they will all become self-supporting members of the community, some of them assuming positions of responsibility.

When should a boy or girl be given pre-vocational or vocational work? Under what circumstances should he be permitted to leave school before the compulsory age limit? What type of vocational training should be offered him? These and similar questions can only be answered for each individual in the light of adequate guidance. The vocational act of Ontario has been amended to include industrial training for adolescent subnormals. [7:7] Two of the school systems visited allow subnormal children to obtain work-permits at 14 years of age under proper supervision (C, J). One system allows a subnormal boy or girl to leave school for employment at 16 years of age (M). Unfortunately, many children with subnormal mentalities are unable to take advantage of State Rehabilitation and Vocational Acts or of trade school opportunities because they have not completed the grade requirements. Some schools substitute special prevocational training for mentally subnormal children, but the need for this type of training is far greater than the present facilities for supplying it.

Ada Fitts states that a child may be prepared for appropriate employment and may be unsuccessful because of lack of power of self-direction, and urges that oversight and follow-up care be provided each subnormal who leaves school. She ventures the opinion that the assumption of this responsibility for a year or two beyond the school age is just as much a proper function of the public schools as is the work with adults in continuation and evening schools and centers. [104:2]

Table XV shows the need of supervision for mentally deficient boys and girls after they leave school.

The fact that 67 per cent of the boys and 48 per cent of the girls hold their positions less than a year emphasizes the need for supervision of mentally deficient boys and girls for at least one year after they leave school and preferably longer.

Descoeudres describes the work of the out-of-school organizations, protection societies and after-care committees in providing such supervision in England and France. Before the child leaves school these organizations visit and sometimes financially aid the parents and place the children in the country if their condition warrants it. After the child leaves school, the protection societies guide him and his parents in a choice of occupation, assist in placement, discourage the acceptance of jobs which might be detrimental to his health or morals, such as jobs as messenger boys which throw the children on to the street, appoint patrons to watch over the physical, mental and moral well-being of each individual, make definite contacts with employers as to wages and conditions of work, and provide financial assistance where the child cannot fully support himself. Germany and Belgium have a number of workshops for the teaching of simple trades. Weaker children are provided for in colonies in the country. [97:41-46]

TABLE XV

PERCENTAGE OF BOYS AND OF GIRLS HOLDING POSITIONS FOR VARYING PERIODS *

Length of Time Position is Held	Percentage	
	Boys	Girls
Less than one month	15	24
1 to 11 months	52	24
1 to 2 years	12	18
2 to 3 years	7	14
3 to 4 years	6	8
4 to 5 years	3	6
5 to 6 years	0	2
6 to 7 years	1	4
7 to 8 years	1	0
Over 8 years	1	0
Average time position is held	1 1/3 years	1 2/5 years

* Data furnished through the courtesy of Miss Julia Maier, Trenton, N. J.

Only three of the school systems visited by the author had a definite system of follow-up for mentally subnormal boys and girls (J, O, Q). Two systems kept incidental records of where they were employed but made no effort to supervise the employment (F, K). Only one school system maintained a placement service and that only for boys who were taking special preparatory or pre-vocational training (B). Gesell gives the five essentials of vocational after-care and guidance as: (1) an after-care supervisor, (2) follow-up records, (3) consultations with parents, employers and social workers, (4) a voluntary after-care committee, (5) vocational probation by the Juvenile Court. [13:53] Emily Burr sums up the problem when she says, "The difficulties for the utilization of the feeble-minded in industry are more apparent than real. What is needed is greater coöperation on the part of the employer." [5]

THE MENTALLY SUPERNORMAL

Educational guidance in school is probably the greatest need of boys and girls who are mentally supernormal. The survey staff in a survey of the schools of Maple Heights, Ohio, defined guidance as ". . . the sympathetic, unbiased, enlightened help which every school should offer to its pupils in planning their future. Guidance is advice, not dictation." [6]
They further stated, "Educational guidance must be accompanied by vocational guidance, either formally or informally." [7]

While the guidance procedure best adapted to the boy or girl in the regular grade is equally applicable to the boy or girl of supernormal intelligence, special efforts of guidance as to choice of future career would pay special dividends in increased utility of brain power in industry, commerce and government. This is especially true in view of the investigations of Terman in which he found that the gifted children selected for case studies show several examples of definite specialization. [160:362]

There is further need of follow-up for the mentally supernormal in health. Because of their unusual ability they are apt to carry a heavier academic load than normal children. Caution must be observed in that the retardation of physical development of the boys and girls may become such that the special class is inadvisable for them. Periodic physical examinations should be given to determine their physical fitness for remaining in the class. In rare cases, social attitudes may develop which will make it desirable to remove a boy or girl from the special class because of the effect on the remaining children.

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[5] Burr, Emily, "Adapting the Feebleminded to Industry," *Industrial Psychology*, 2: 132-38, March, 1927. [92]

[6] Strayer, George D., Engelhardt, N. L., and others, *Report of the Survey of the Schools of Maple Heights, Ohio*, p. 140. Bureau of Publications, Teachers College, Columbia University, 1929.

[7] *Ibid.*, p. 143.

The need for follow-up and after-care which is so apparent in subnormal children is not as great with supernormal children. Their very mentalities give them powers of self-direction and control which obviates the necessity of supervision; in fact, it is questionable whether or not these boys and girls would not better develop initiative and power of direction by being allowed greater freedom of activity after they leave the public school. Goddard states that the freedom found in the special classes has developed responsibility, self-control and interest in work that quickly shows results in high school. [148:115] There is no reason to believe that educational guidance in high school would not show the same results after leaving school.

VISUAL DEFECTIVES

Winifred Hathaway states that improvement of the physical condition of the schools is a determining factor in preventive work. [178] Alexander concludes that in Germany, poor food, poor ventilation in the schools, and poor lighting in the home are largely the causes of defects in children who wear glasses and have weak eyes. [2:132] Certainly, if the work of the sight-saving classes is preventive as well as remedial, the physical features of the room must be such that these objectives can be obtained; and if this is applicable to the sight-saving classrooms it is even more so to the regular classes if the number of visual defectives is to be reduced. [190] Poor home conditions often defeat the purpose of the sight-saving class. In Philadelphia the special class teachers made a total of 108 visits to the home in order to gain the coöperation of each home in preventing reading by the pupil and in correcting unhygienic conditions. These teachers also advised the parents concerning reading and work during the summer and checked up closely on the child's summer activities. The Canadian Council on Child Welfare issues a pamphlet of advice to parents of weak-sighted children. [166]

Peyser advocates that all verified cases of defective eyesight in children be brought to the attention of the parents personally for follow-up and remedy. [190] Lawes advocates the making of home visits twice a year. [180]

From the ages of six to fifteen years, the eyes change and need frequent testing. [176] [196] Furthermore, myopes become increasingly worse and need frequent changes of glasses.[8] In Cincinnati the follow-up work includes provision for glasses and other care. [167] Refusal to wear glasses which are suited to the pupil's needs and are comfortably fitted should be regarded as sufficient cause for exclusion from school. [184]

One of the school systems visited had a definite program for school follow-up through provision of glasses and treatment (N). Two others checked the vision annually (A, B), one semiannually (E) and one weekly (G) by oculists' examinations. One school system arranged for the submission of the degree of vision of each pupil to the teacher by private oculists (F). Emily Pratt holds that the school medical inspector has the following responsibility in sight conservation: (1) to execute and standardize a uniform method of eye testing; (2) to supervise all corrections of defects obtained by such method of eye testing; (3) to organize the follow-up work in order that the greatest possible number of defects may receive the proper correction. [191:19]

There seems to be very little need of sight-conservation classes in the high school because pupils attaining the high-school level are capable of making adjustments without it. The report of the Council of British Ophthalmologists found it undesirable to encourage children in sight-saving classes to follow a higher education with the prospect of a sedentary occupation, thus incurring great risk of serious breakdown later in life. [197:23] In all of the school systems which the author visited, however, he found there was a tendency to encourage weak-sighted children to go to high school if they were mentally capable of doing the work. They maintained a system of close follow-up, by frequent examination (C, E), by supervision of seating and lighting (F), by teaching the mechanics of reading (F), and by furnishing readers (G). Lawes recommends that all the high school work of visual defectives be under the supervision of a sight-saving class teacher and that all copying and reading be done by readers. [180] Coffin and Peck report that, in Cleveland, pupils with high myopia are not advised to take college or normal school work. [168:48]

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[8] According to Winifred Hathaway, Associate Director, National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City.

There should be no objection to weak-sighted or even blind boys and girls pursuing a high school course if readers who are able and willing to do all the reading can be provided from the same classes. It would seem that the more education they could get, the happier they would be in after life because they would then have a substitute for the social contacts they must miss on account of their handicap. Care must be taken that they are guided in their choice of studies so that they will not make preparation for work in the future which might aggravate their condition.

Follow-up service that places and supervises the weak-sighted boys and girls in industry is essential to any plan for their education. Fifty-four cities have adopted the requirement of a certificate showing that children with defective vision are in such physical condition as to enter industry without detriment to their health. [278:182] This places a direct responsibility on the school for seeing that they are in such condition and are prepared to enter industries which will not be detrimental to their health.

Regarding the handicap of blindness, Dresden says, "Contrary to ordinary belief, the mere lack of vision is not the tragedy that it seems. The real tragedy is the attendant idleness and lack of a job."[9] The Special Commission on the Blind in Massachusetts found that 1,797 out of 3,888 blind adults were entirely self-supporting and many more were partially self-supporting, and that the greatest objection to employing blind in factories is the fear of increased liability, although investigations have shown that the fear is ungrounded. [182] As the greatest obstacle to employment of the blind is the attitude of the employer, it is essential that the school follow-up program include provision for making contact with employers in the community. Certainly, supervision of the blind and partially sighted who leave school is essential for a period long enough for them to make the necessary adjustments.

[9] Dresden, W. F., "How Shall Individual Work for the Blind Best Progress?" pp. 24-29, *Outlook for the Blind*, December, 1927. [170]

HEARING DEFECTIVES

Most of the principles of follow-up work brought out in the above discussion are applicable to the hearing defectives. The New York League for the Hard of Hearing emphasizes the retesting of hearing periodically to prevent progressive deafness through the restoration of sinuses to normal. Most of the systems visited that provided classes for hearing defectives provided ear treatment as a part of the educational facilities offered. One school system received the volunteer services of an otologist for periodic treatment (E). Another retained a nurse for washing out ears regularly, thus saving the time of the physician, and trained older girls to care for the hygiene of the younger ones (G).

The American Federation of Organizations for the Hard of Hearing recommends: (1) a note to the teacher defining the amount of hearing and advising helpful measures such as a front seat, freedom from noise, distinct speech of teacher with face in a good light, speech reading; (2) note to parent or guardian stating the deafness and advising an ear clinic or otologist for further work with a follow-up in remedies provided; (3) regular yearly testing of the hearing of all children in the school. [236]

In the cities which the author visited which maintained classes for the hearing defectives, notices were sent to parents as to the results of the ear examinations, but in only one case was the follow-up procedure adequate to insure correction of remediable defects. Wright has published a very helpful book for parents of deafened children in which he outlines the work which can be profitably done at home by untrained persons. [238] The supervisor of speech reading in one of the school systems visited emphasized the necessity for follow-up work in the junior and senior high school because of the lack of understanding of the problem on the part of the teachers (G).

The problem of the hard-of-hearing and the deaf is a very difficult problem in industry. Some factories have established "deaf-mute" departments to facilitate the work of the deaf. Benson says that this is not satisfactory because the workers are social outcasts and lose the opportunity of perfecting themselves in the art of lip reading. [3] Best concludes that the deaf are not a burden on the community and that they are wage earners in a degree that compares well with the general population. [204:90] In certain industries deafness does not seriously handicap efficiency. [215] [225] The problem of guidance in school is to instruct deafened children so that they will be prepared to enter those industries in which they can succeed, to provide placement service to facilitate their entrance into industry, to make the proper contact with employers so as to make their period of adjustment less severe, and to supervise them in industry until such time as they are firmly established on an equal basis with similar workers.

SPEECH DEFECTIVES

There are two very important phases of follow-up work for speech defectives. In the first place, the regular class teacher must carry over into every recitation the teachings of the special teacher, and, secondly, the boy or girl who has been cured of a speech defect must be examined periodically to avoid the recurrence of the defect. Both of these aspects of follow-up demand the teachers coöperation rather than technical knowledge. Some special vocational guidance may be needed to prevent the pupil's taking work that requires an excessive amount of public or class speaking, but this problem is relatively unimportant, from the standpoint of numbers.

The importance of follow-up is indicated in the percentage of corrections and improvements reported from investigations. Horn, in a study of seven cities, reported cures which the author estimated would average about 75 per cent of the number treated.[10] In Detroit, 93 per cent of the speech defectives showed improvement, of which 42 per cent were cured. Special teachers visited regular teachers in the school 1,639 times, visited homes 1,695 times and conducted 157 demonstration lessons.[11] In Buffalo, 98.5 per cent of the speech defectives showed improvement, of which 21 per cent were cured.

ORTHOPEDIC DEFECTIVES

Follow-up for children with orthopedic defects is of two types; namely, for those who are slightly crippled and who require periodic attention until their defect is removed, and for those who cannot use their limbs or who are in such condition that it is unwise to move them about. The former type should be given remedial treatment through proper therapeutic programs in the regular classes, and will present no special problem of follow-up except in so far as periodic physical examinations are required to measure progress. The second type requires follow-up work for the correction or amelioration of their handicaps, for guidance as to proper education and vocational courses to pursue, and for placement and supervision in industry.

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[10] Horn, John L., *The Education of Exceptional Children.* [16]

[11] Stoddard, Clara B., Supervisor of Speech Education, Detroit Public Schools, Detroit, Mich. (Data furnished by correspondence.)

The Michigan Society for Crippled Children advises that all children enrolled in orthopedic classes be under the constant care and supervision of orthopedic specialists, with provision for therapeutic and physiotherapy treatments, rest periods, and corrective exercises. [269:1] In Hamtramck, Michigan, special service includes bus transportation, hot lunch, monthly examination by a specialist, treatment and hospitalization where necessary, and a physiotherapy room with a physiotherapist in charge. [269:23] Grand Rapids, Michigan [258] and Cleveland, Ohio [259] [262] provide similar facilities for physical follow-up work, in addition to which Cleveland provides for or advises as to surgical operations during summer vacations. All of the cities visited which maintained special schools for cripples provided these facilities at the school or made arrangements for them at hospitals. Two school systems (C, E) provided for the making and repair of braces. In two systems home contacts were made by nurses for treatment and follow-up (G, E). One school system reported difficulty with the mental attitude of cripples at adolescence because of their condition and were attempting to give them guidance through literature (F). Out of 52 cripples, one system sent 8 to high school and 6 to trade school (C). Pupils entering the high school in Cleveland from the Sunbeam School were able to maintain standards equal to the standards maintained by graduates of other junior high schools in the city.[12]

None of the school systems visited maintained an organized vocational guidance program or a placement and supervisory program for cripples who left school. Three of them, however, used the facilities of the State Rehabilitation Bureau for follow-up in industry (D, B, F) and one system had the interest of the Chamber of Commerce to the extent that it was conducting the follow-up service (G). Benson reports that the "Ohio Plan" for rehabilitation is very successful. It is administered by representatives of all social agencies and gives vocational training to boys and girls leaving school, sometimes paying the parents what the children might otherwise earn. One difficulty with which the "Ohio Plan" is faced is getting the boys and girls to do lower types of work. [3] New York State has a similar plan except that it is administered by the State Department of Education with the coöperation of the superintendents of schools and County Judges. It provides for the education, care and sustenance of any crippled child who is sufficiently handicapped to prevent his freedom of movement. Orleans found that there is no organized attempt at vocational training in any of the 9 cities in New York State maintaining classes for crippled children, consequently there is no way for the children to learn a trade that will make them self-supporting. The directors of the education of the physically handicapped, when asked to suggest ways in which the State Department of Education might be of assistance in furthering this work, uniformly stressed the need for an organized program of vocational education and placement. [273:9; 23]

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[12] *Sunbeam School.* A pamphlet published by the Board of Education, Cleveland, Ohio.

Abt suggests that, after the crippled child has received remedial treatment, convalescent care and education, society has done all that it can to help him, and that it places responsibility on the business and professional men to consider him on his own merits and give him an equal chance to obtain employment and demonstrate his fitness to cope with the problems of a normal life. [256:59] A survey of crippled children in New York City showed 59 per cent entirely self-supporting, 13 per cent partially self-supporting and 28 per cent wholly dependent. [277] This indicates that we are still a long way from the ideal of each cripple contributing to his own support.

Vocational training for occupations which the boy or girl will be able to do in spite of this handicap, articulation with employers to secure an adequate trial at the chosen job, and supervision of the job over the period of adaptation, is the requirement for economic release of the cripple and the school should be one of the agencies for accomplishing this end.

CASES OF LOWERED VITALITY

The follow-up program for the malnourished, the anemic, and the tubercular is mainly a problem of such physical treatment in school as will remove the defects. For the active tuberculosis case, the after-care problem is one of segregation until the boy or girl is cured or placed in a sanitorium as incurable. For the cardiac, the problem is one of guidance into such occupations as will not unduly strain the heart.

Probably the most important single factor in remedial treatment is a regular medical examination held as often as each case requires, never less frequently than once a month, and, preferably, once a week. The temperature should be taken and recorded at regular intervals—twice a month and oftener as indicated; weight should be taken and recorded once a month and preferably once a week; height should be recorded at least once a term; and correction of defects at the earliest possible time is desirable. There should be several rest periods a day, shorter class periods, and lunches. [305:345; 388] All cases who do not show a gain in weight or who show a loss in weight as indicated by their own series of weights and not on a comparative basis with other pupils, should be routed for a thorough, diagnostic, physical examination. Care must be exercised, however, to take into account seasonal variations in growth in comparing weights. [58:31] [288:223] [295:224] To this Hendrikson adds home control for good food and health habits, and fresh air by day and night. [293]

School lunches play an important part in programs for cases of lowered vitality. In all the cities which the author visited, a hot noon lunch was served and mid-morning and mid-afternoon milk was furnished. The American Child Health Association found that 69 cities serve a morning lunch and 8 cities serve both a mid-morning and a mid-afternoon lunch. Only 15 cities lay no claim to this service. [278:154]. Mrs. Burke holds that the lunches constitute the greatest item of expense and that they are not necessary although pupils improve faster when the school lunches are served [283]. This view was also held in one of the smaller cities. The opinion that the school lunch is unnecessary is contrary to the evidence presented above, and also is not borne out in practice and will have to be substantiated by further evidence before it can be accepted. Wood and Rowell state that school feeding is a cure for malnutrition and may also be a preventive measure; and that medical service is somewhat limited in its scope at present while the school lunch can reach every pupil in the school. [305:402] [13]

One school system visited gave the mid-morning milk at 8:45 because they found it was more effective when used to supplement the breakfast (M). In one school system visited the special teacher visits the home periodically and makes a report once a year to the school physician on the progress of and the results of home visits (G). In another system, reports are sent to parents requesting the correction of physical defects on the theory that diet is incidental (Q). In two of the systems the nurses make systematic home visits for the purpose of following up the instructions given in the special class. (M. E.)

In the case of children with tuberculosis other than active, Parkhurst recommends the open-air camp in the summer as an auxiliary agency in building up health. [300] Mrs. Burke holds that all open-air class children should have a daily health inspection by the school nurse. [283]

The follow-up of potential cardiac cases involves the control and care of communicable infections, the supervision of all "contacts" with the rheumatic family and the periodic inspection of all forms of infection, especially in the nose and throat. [297] The control and care of a child with organic heart disease involves the same follow-up procedure as with the other convalescents except that the pupil's exercise must be closely supervised. Barnhill advises securing the coöperation of teachers in handling them from the standpoint of nervous stability and the detection of overstrain in play or work. Cardiac cases are advised regarding choice of occupation in order that future strain on the heart may be prevented by a wise choice of occupation. [280]

The Temperamentally Atypical

The adequate care of this type of boy or girl through proper educational facilities and through sympathetic personal guidance will do much to eliminate the need for after-school follow-up or even for vocational guidance. The only requisite for their assumption of positions on an equality with normal individuals is the development in them of right attitudes and habits and of control of their emotions. While we still have delinquents leaving school as delinquents, supervision will be necessary when the boy or girl begins wage earning. The employer should be informed as to the limitations of the boy or girl and active coöperation enlisted for his or her success. [140:264]

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[13] Literature on the school lunch is available from the United States Bureau of Health, Washington, D. C., and from State Health Departments.

The follow-up necessary in school is properly the work of the psychologist. Complexes, instincts, inhibitions, emotional tendencies and character and personality traits must be so investigated and observed over a period of time that the root cause of the maladjustment can be found. Although home conditions may not be a cause of delinquency, they play a significant part. The ability of the special class teacher to understand the child in the light of the home conditions which she has personally seen, is oftentimes a factor in solving the problem which is causing the maladjustment. An *esprit de corps* can be developed even among the delinquents. The superintendent of one of the cities visited reported to the author that their twenty-four hour-a-day detention home had organized an alumni association which was composed of a number of young men now holding responsible positions (A).

An adequate follow-up program for atypical boys and girls should be based on the following plan:

1. The active participation of the teacher must be enlisted in order that she may better understand each individual problem.
2. Home coöperation is essential in order that the work of the school may not be undone by the home.
3. Coördination of school and social agencies is desirable in order that well-being may be promoted.
4. Periodic reëxamination of each atypical boy or girl is essential to determine progress or to insure return to the regular class upon removal of the disability.
5. Such treatment of each boy and girl as will insure maximum development or progress must be provided for.
6. Accurate knowledge of the physical, mental and emotional limitations of each boy or girl should be obtained.
7. Coöperation and articulation with the business and industrial world should be enlisted.
8. Prognosis of the position that each boy or girl may hold in

society, to the extent that it may have been shown by experimental evidence or investigations, should be determined.

SUMMARY

1. Effective periodic reëxamination of all atypical boys and girls is the first requisite of a follow-up program.
2. Coöperation and coördination of the school with social and welfare organizations is essential to the eradication of undesirable home conditions, both economic and social.
3. The results of the diagnosis of all atypical boys and girls should be interpreted for and made available to, the classroom teacher.
4. Direct visitation of the home by the classroom teacher is one of the most important means of understanding the problems of pupils and is a large factor in their success in class.
5. Vocational guidance is essential to an adequate follow-up program.
6. The type of occupation in which a subnormal boy or girl may succeed is indicated by his mental level.
7. Mentally subnormal boys and girls, in some instances, may be permitted to leave school for industry before the compulsory age limit is reached, provided they are emotionally stable and have normal physique and development.
8. The school should assume the responsibility for supervision of atypical boys and girls after they leave school until such a time as they are adjusted to their new environment or have proved themselves incapable of independent existence.
9. European countries have developed after-care of mental defectives to a far greater extent than has this country.
10. Very little vocational follow-up was carried on in the cities visited by the author, only one school maintaining a placement service.
11. Educational guidance is a primary requisite of the mentally supernormal.
12. Removal of physical defects is the determining factor in remedial work for the physically atypical.
13. Close follow-up of reading conditions is essential in the care of visual defectives.
14. Children needing glasses should be provided with them, and should be excluded from school for failure to wear them.

15. There is no reason why children with low vision who are capable of doing the work should not attend high school if proper supervision is provided and if readers are furnished where necessary.

16. The school has a responsibility for such contact with employers as will contribute to their understanding of the deficiency of the boys or girls employed.

17. To be effective, follow-up work for speech defectives must carry over into the work of the regular classroom and must include periodic reëxamination after pupils are discharged from special classes.

18. The most important phase of follow-up for cripples is the provision for a regular program of therapeutic treatments for boys and girls who are able to attend the regular classes but whose minor defects handicap them in their work.

19. Frequent medical examination is the most important single factor in follow-up for the cases of lowered vitality.

20. Regularity of growth is an important indication of physical progress.

21. School feeding is an important part of the corrective program for cases of lowered vitality.

22. Close supervision of the exercise of cardiac cases allows for a great deal of freedom of activity on their part.

23. The root causes of neurosis should be determined by continued observation by trained teachers and psychologists.

24. Constant reorganization of the school program to provide educational offerings suited to the individual needs of boys and girls will do much to eliminate truancy, incorrigibility and delinquency.

CHAPTER VIII

CONCLUSION

Equality of educational opportunity is generally accepted in principle by the American public school system. That is has not been made available to all children is due to a number of causes, one of which is that children who deviate from the normal are unable to take advantage of the education which is offered to normal children. The general aim of this study has been to identify atypical children and to locate them in a place in the school organization which will afford them the best opportunity for securing an adequate education. The state supervisory program, the local administrative organization, the classroom organization, and special problems relative to the establishment of special classes, have been omitted, primarily because they represent too extended a problem for inclusion in a single study.

Before any organization can be set up for atypical children in a public school system it is necessary to find out who they are, how many there are, who is responsible for their education, where they can be found, what are the causes of their deviation, where they should be assigned in the school organization, and what continuous program is necessary for their well-being. The author has attempted to answer these questions in this study.

The classification of types of atypical children is more or less arbitrary but is necessary if differential educational facilities are to be provided. The author has classified types of atypical children as follows:

I. The mentally atypical: (1) the mentally subnormal; (2) epileptics; (3) the mentally supernormal.

II. The physically atypical: (1) visual defectives; (2) hearing defectives; (3) speech defectives; (4) orthopedic defectives; (5) cases of lowered vitality.

III. The temperamentally atypical: (1) neurotics; (2) truants, incorrigibles, and delinquents.

There is very little agreement as to the numbers of each type which may be found in the school population. This study attempts to determine the percentage of each type which may generally be found in any school system. The state has a definite responsibility for setting up a minimum program of education which can be achieved throughout the state. Many states have assumed part of the cost of such minimum program in order that it may be carried out by all communities regardless of size or wealth. This study has shown that the state should set aside a certain percentage of the cost of the minimum program for the education of those children who deviate from the normal to such an extent that they require special educational facilities, and has pointed out a procedure for the determination of such percentage, weighted for the increased cost of such education.

The initial selection of most atypical children can be accomplished through the organization already established in a school system but determination of the causes of deviation is a matter for expert diagnosis. School systems will be successful in caring for these children only to the extent that they avail themselves of the services of specialists, in diagnosis, in assignment to school organizations, and in remedial treatment.

Regardless of the administrative organization which is set up to care for atypical children in special classes, there will need to be a system of close follow-up. During school life, progress must be measured, diagnoses checked, transfers accomplished, vocational and educational guidance given, home conditions investigated, contacts made with social and welfare agencies and environmental conditions made conducive to progress. After-school follow-up should include coöperation and coördination with employers, placement service, and supervision until such time as the boy or girl becomes adapted to the new environment.

This study indicates but the first step in providing equality of educational opportunity for atypical children. There is a need for the development of state, county and local programs of education applicable to communities of all sizes, in order that administrative organizations may be set up for the economical and effective distribution of educational facilities to all atypical children. A phase of this problem is the extension of preschool education to include the remedying of such defects in children as will make unnecessary their education in special classes when they enter school. Another phase of administrative organization is the development of a system of uniform records and reports to facilitate the selection, diagnosis, assignment and follow-up of atypical children. There is also a need for investigations as to the qualifications necessary for special class teachers, the training facilities now being provided for them in educational institutions, the supply of and the demand for such teachers, and the relation of the duties of special class teachers to those of the regular class teachers and the visiting teachers.

There are certain problems which arise in connection with the administration of classes for atypical children, the solution of which will greatly facilitate the administration of special classes. These problems include: (1) methods of transportation for certain types of children; (2) the desirability of segregation of classes and of sex; (3) the antagonistic attitudes of parents and teachers; (4) measures of progress of and improvement in atypical children; (5) the prediction of socio-economic success in after-school life.

The effectiveness of classroom instruction of atypical boys and girls depends on the special equipment, materials, and textbooks supplied, the adequacy of the curriculum adopted, the special methods of instruction used, and the type of teacher provided. A number of books and articles have been published treating of these factors for one or more of the types of atypical children but there is an administrative need for bringing together in one study the standards of classroom organization for all types of atypical children.

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APPENDIX

TABLE A

PERCENTAGES OF EACH TYPE OF ATYPICAL CHILDREN AS REPORTED BY INVESTIGATIONS AND AS ESTIMATED BY AUTHORITIES

MENTALLY SUBNORMAL						MENTALLY SUPERNORMAL		EPILEPTIC	
Mental Defectives				Total					
Social		Social and psychological		Mentally defective and backward					
1	2	1	2	1	2	1	2	1	2
16	.2	33	1.0	14	1.7	14	.5	*	.08
14	.4	20	1.0	108*	2.8[1]	4	1.0		
15	.5	36	1–2	33	3–5	13	1.0		
75	.5	14*	1.2	15	4.0	150	1.0		
120	.5	13	1.5[a]	13*	4.6	77	2.5		
72	.5	116	1.5	108*	4.7	36	4–6		
91	.5[b]	7	1.6	36	4–6	33	5.0		
75	1.0[b]	10	2.0	109	5.5	69	5–10		
5	1.0	13	2.0	69	5–10	161	10.0		
13	1.0	105	2.0	79	10.0				
130	1.0	113	2.0	77	15.0				
		100	2.0[a]						
		101	2.0[b]						
		103	1–3						
		77	2.5						
		9*	2.5						
		108	2.6						
		122*	2.6						
		40*	2.8						
		75	3.0						
Number of References 11		20		11		9		1	
Median Percentage	.5		2.0		4.7		1.75		.08

Note: See footnotes on page 177.

TABLE A (*Continued*)

VISUAL DEFECTIVES

	Blind		Special Class		Impaired Vision		Total Defects	
	1	2	1	2	1	2	1	2
	16	.05[b]	16	.1	191	4.3	167	10.0
	201[2]	.08[b]	24	.1	160	10.8	160	10.8
			26	.1			191	18.0
			177	.1			46*	21.0
			179	.1[3]			32	25.0
			7	.2			46	25.0
			175	.2			163	25.0
			189	.2			171	25.0
			196	.2			207	25.0
			27*	.2			185	25.0
			14	.3			193	33.3
			191*	.3			163	36.1
			177	.4[4]			191	60.0
			13*	.8				
Number of References	1		14		2		13	
Median Percentage		.05		.2		7.55		25.0

Note: See footnotes on page 177.

TABLE A (*Continued*)

HEARING DEFECTIVES								SPEECH DEFECTIVES			
Totally Deaf		Special Class		Full and Part-time Special Class		Impaired Hearing		Stuttering		Total	
1	2	1	2	1	2	1	2	1	2	1	2
16	.04[b]	24	.1	220* Chicago	.9	220	3.4	240*	.7	14	.3
235	.07[b]	14	.2	220* Buffalo	.9	220* Baltimore	4.0	254	.9	46*	1.1
		13*	.3	160	1.0	46*	4.8	13	1.0	13*	1.3[a]
		7	.4	28	1.0	Endres[1]*	5.0	16	1.0	4	2.0[a]
		120	1.0	204	1.0	209*	5.2	62	1.0	249	2.1
				227	1–2	Endres[1]*	6.0	242	1.0	252	2–2.5
				220* Lynn	1.1	226*	6.5	247	1.9	65*	2.8
				220* Chicago	1.3	220* Chicago	8.7	248	1–2	254	2.8
				220* Cleveland	1.4	210	8.7[a]			16	3.0
				210*	1.6	Endres[5]*	9.2			33*	3.0
				220* San Fran.	2.1	6	10.0			247	6.3
				210	2.5	160	10.0			A	10–12
				204	3.6	208	10.0				
						11*	12.2				
						210	12.5				
						213	12.5				
						218	12.5				
						236	14.4				
						217	14.5				
2		5		13		19		8		12	
	.06		.3		1.1		9.2		1.0		2.6

Note: See footnotes on page 177.

TABLE A (*Continued*)

ORTHOPEDIC DEFECTIVES				CASES OF LOWERED VITALITY					
Special Class		Total		Special Class		Total			
						Malnourished		Tubercular	
1	2	1	2	1	2	1	2	1	2
7	.1	7	1.5	13	1.2	305*	5.0	27*	3.0
14	.2	268*	1.6	14	1.2	46*	16.6	283	4.2
24	.2	305*	5.8	46	1.3	86	20.0	46	5.0
256	.3[b]	284	6.0	7	1.5	291	20.0	284	5.0
260	.3	46*	10.0			292	20.0		
263	.3					284	25.0		
269*	.3					303*	30.0		
268*	.5					291	10–30		
33	.6					288	33.3		
276*	.7[b]								
272	.7[b]								
277	1.0								
267	1.5								
13		5		4		9		4	
	.3		5.8		1.25		20.0		4.6

Note: See footnotes on page 177.

	CARDIACS				ANY PHYSICAL DEFECTS		TEMPERAMENTALLY ATYPICAL					
	Special Class		Total				Mirror Writers		Neurotics		Truants and Delinquents	
	1	2	1	2	1	2	1	2	1	2	1	2
	17	.5	290	.8	17	75.0	60	.04	14	.2	13*	.4
	301	.5	46	1.0	32	75.0	60	.5	13*	.8[a]	14	.4
	279	.6	46*	1.3					13	1.0[a]	103	8.0
	279	.7[a]	279	1.3					15	1.0	30	10.0
			287	1.5					36	1–2		
			298*	1.5								
			280	1.8								
			284	2.0								
			17	3.0								
Number of References	4		9		2		2		5		4	
Median Percentage		.6		1.5		75.0		.27		1.0		3.8

Note: Throughout tables, numbers in Column 1 indicate reference numbers in Bibliography. Numbers in Column 2 refer to percentages of school population: [a], Percentage of elementary school children; [b], percentage of total population.

* Refers to reports of investigations. All others are estimates.

[1] Borderline cases only.

[2] In Greece, not included in computing median.

[3] Two-tenths per cent of one in small cities.

[4] Without medical inspection.

[5] Joseph J. Endres, chief, Physically Handicapped Children's Bureau, State Department of Education, Albany, N. Y.